ROCKS AND MINERALS

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MINERALOGY
•
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LAPIDARY

A natural Quartz Crystal [illegible] around Hot Springs, [illegible]

60c

MARCH - APRIL, 1954
(WHOLE NUMBER 239)

57th LIST OF FINE MINERALS

HERDERITE, Newry, Maine. Group of xls. 1½ x 1¼	$ 2.00
UVAROVITE, Orford, Quebec. Micro. xld. on Diopside. 2½ x 2½	2.00
CLINOCHLORE, Tilly Foster. Mass of xls. w. white coating. 2½ x 2	2.00
LINARITE, Cumberland. Minutely xld. in matrix. 2 x 1½	2.50
CELESTITE, Ontario. Bright red xlline. radiating mass in rock. 3½ x 2½	2.50
ANDALUSITE, Mono Co., Cal. Small sharp xls. on mass. 3 x 2	2.50
GMELINITE, Paterson, N. J. Group of pink xls. 2½ x 2	2.50
GIBBSITE, Chester Co., Penna. Minutely mammillary on matrix. 3½ x 2	2.00
SILVER, Cobalt, Ontario. Solid plate, no matrix. 2 x 1	2.00
PYRRHOTITE, Kisbanya. Fine xld. mass showing good "rose". 3 x 2½	12.50
PYROMORPHITE, Phoenixville, Pa. Well xld. in matrix. 3 x 2 x 1½	5.00
APOPHYLLITE, Centerville, Va. Small transp. xls. on PREHNITE. 3½ x 3	3.00
GYPSUM var. SELENITE, Ohio. Two xls. in clay matrix. 2½ x 2	1.50
COVELLITE, Colorado. Brilliant blue mass w. some Pyrite. 2½ x 2	3.00
CASSITERITE, Cornwall. Xld. with Quartz xls. on ore. 2½ x 1½ x 1½	3.00
do. Galicia, Spain. Fine twin xl with curved faces. 2 x 1½	5.00
do. Bohemia. Large brilliant twin xl. 2 x 2 x 1	10.00
ROSOLITE, Xalostoc, Mexico. Pink xls. in rock. 3 x 2½ x 1½	2.50
do. With yellow Idocrase. Fine polished slab. 8½ x 6. 5/8" thick.	10.00
NAGYAGITE, Nagyag. Xlline. plates with some Quartz. 1½ x 1	3.00
EPIDOTE, Arendal. 1¾" xl. in xlline. mass. 3 x 2¾ x 2	3.00
EUCHROITE, Hungary. Good xl. groups on rock. 3 x 1½. Found in 1862.	7.50
DIOPSIDE, Ontario. Deep green bright opaque xl. 3 x 1¼	1.50
CINNABAR, Alameda Co., California. Xld. on drusy Quartz. 3 x 2½	3.50
MICROCLINE var. AMAZONITE, Pike's Peak. Large group (8 x 4½ x 3) of parti-colored-green and flesh xls. up to 1½" in size. 5 lbs.	15.00
APATITE, Bohemia. Greenish translucent xls. with violet Fluorite xls. with Cookeite on rock. 4 x 2 x 1¾	6.00
AZURITE, Chessy. Nodular oval mass of large xls. 3½ x 2½ x 2. (12 oz.) No matrix. Very fine "old-timer".	12.50
CELESTITE, Sicily. Excellent group of large xls. 3½ x 2½ x 2	6.00
KERMESITE, Saxony. Radiating on rock. 2½ x 2	3.50
TRIPHYLITE, Newry, Me. 3/8" blue xl. & xlline. masses in Matrix. 3 x 2	3.00
ANDRADITE, Gooseberry Mine, Franklin. Bright black xls. on mass. 4 x 3	5.00
HEMATITE, Brazil. Xld. "Iron rose". Very fine. 3 x 2½	10.00
PROUSTITE, Saxony. Well xld. with Siderite in Quartz. 3 x 2	15.00
MALACHITE, Bisbee. Deep green small mammillary mass. 2½ x 2 x 1½	3.50
CHALCOPYRITE, Cornwall. "Blister Copper", Mammillary mass. 3 x 1½	2.50
ALMANDITE, Salida, Colo. Sharp dodecahedral xl. 2 x 2 x 2½. Clean.	2.50
TENNANTITE, Cornwall. Small xls. on mass. 2 x 1½	2.00
TORBERNITE, Cornwall. Micro. xld. on matrix. 2 x 2	3.50
SIDERITE, Cornwall. Small excellent translucent xls. on Quartz. 3 x 2½	5.00
BERYL var. MORGANITE, Madagascar. Pink translucent tabular xl. 4 x 3 x 7/8. Rough faces. Not cuttable quality.	12.50
UNIDENTIFIED TELLURIDES, Kalgoorlie, W. Australia, Xlline. Masses in rock. 2 x 2. Perhaps COLORADOITE.	3.50
ANDRADITE, Langban. Small bright xls. w. some Rhodonite on rock. 2 x 2½	3.50
AXINITE, Cornwall. Good xls. on mass 3 x 2½	2.50
DESCLOIZITE, Chihuahua, Mexico. Xld. mass. 3½ x 2 x 2	5.00
ARAGONITE, Aragon, Spain. Repeated twin xl. 1½ x 1½	2.00

HUGH A. FORD

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No lists furnished, but inquiries for specific minerals welcomed.

ROCKS and MINERALS

PETER ZODAC, Editor and Publisher

America's Oldest and Most Versatile Magazine for the Mineralogist, Geologist, Lapidary.

Published Bi-Monthly

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Contents

WHY NEW JERSEY IS A HAPPY HUNTING GROUND FOR THE MINERAL COLLECTOR—*Meredith E. Johnson* 115
MILLERITE — WILL - O - THE WISP !—*K. E. Gibbons* 121
SAN DIEGO NOTES—*Commander John Sinkankas* 125
HUNTING AGATES IN SCOTLAND—*Sandy Ramsay* 127
SEQUOIAS, DID YOU SAY? IN ALASKA?—*Frank H. Waskey* 130
FLUORITE DEPOSITS OF WESTMORELAND, N. H.—*Mrs. Julian Wetherbee* 142
GEOLOGY OF BRADFORD COUNTY, PENN.—*Richmond E. Myers* 144
PEGMATITE MINERALS OF THE UNITED STATES—*David M. Seaman* 147
FRANKLIN, N. J., STILL A COLLECTOR'S DREAM—*Bevan French* 153
TO THE ROCKIES - AND BACK—*Roberta and Charles Wight* 156

DEPARTMENTS

WORLD NEWS ON MINERAL OCCURRENCES 134
THE SAND COLLECTOR—*Peter Zodac* 160
MINERAL SHOPPER'S GUIDE—*Charles A. Thomas* 164
THE AMATEUR LAPIDARY—*Commander John Sinkankas* 168
FOSSIL DEPARTMENT—*A. Allen Graffham* 170
CLUB AND SOCIETY NOTES 172

MISCELLANEOUS

CHIPS FROM THE QUARRY 114
ULTRA - VIOLET PRODUCTS ENLARGES PLANT 120
ROCKHOUND'S ODE (POEM)—*Davis M. Lapham* 129
NOVICE COLUMN 133
COLLECTING IN NIAGARA GORGE, N. Y.—*Peter Zodac* 141
COLLECTING NEAR SALT LAKE CITY, UTAH—*Carl F. Austin* 152
HOW ONE MAN HOUSES HIS GARNET SANDS—*Chas. S. Knowlton* 158
LOOKING BACK—*Twenty-five years ago in* ROCKS AND MINERALS 159
OBITUARY NOTICES 167
CALLING ALL ROCKHOUNDS—*Marguerite Beymer* 169
INDEX TO ADVERTISERS 224

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CHIPS FROM THE QUARRY

COMING EVENTS

San Joaquin Valley Gem and Mineral Show, April 24, 25, 1954. Agriculture Building, Stockton, Calif.

Brawley Gem & Mineral Show, April 30, May 1, 2, 1954, Brawley, Calif. (For particulars contact Glenora Zarfell, 736 B St., Brawley, Calif.)

Texas Federation Show May 14, 15, 16, 1954, Odessa, Texas (Robert E. Stegner, Advertising Committee Chairman, Box 3587, Odessa, Texas).

Glendale Gem & Mineral Show, May 15, 16, 1954. Civic Auditorium, 1401 Verdugo Rd., Glendale, Calif. (For particulars contact Walter Kohn, 2241 Cambridge St., Las Angeles 6, Calif.)

Oakland Gem & Mineral Show, May 22, 23, 1954, Masonic Temple, 6670 Foothill Blvd., Oakland, Calif., (Show Chairman, Dennis Patterson, P. O. Box 1196, Oakland 4, Calif.).

Wyoming Mineral & Gem Show, June 4th and 5th, 1954, Casper, Wyo. (For particulars contact Mrs. M. D. Hays, 417 W. 17th St., Casper, Wyo.)

Rocky Mountain Federation of Mineral Societies 11th Annual Convention, June 11, 12, 13, 1954, at the Salt Lake County Fair Grounds, Salt Lake City, Utah.

Midwest Federation Convention, Milwaukee, Wisc. (For information contact Dr. H. W. Kuhm, 4718 W. Lisbon Ave., Milwaukee 10, Wisc.). Dates June 24, 25, 26, 1954

Eastern Federation Convention, Oct., 12, 13, 14, 15, 1954, Miami, Fla. (Executive Vice President in charge of Convention, Henry B. Graves, 3163 N. W. 27th St., Miami 42, Fla.).

Rock Landing Quarry Not Leased

In the last issue of R & M a news item appeared on p. 20 that the Rock Landing quarry in Haddant Neck, Conn., had been leased by Walter Busch of Elmhurst, N. Y. A letter dated March 1, 1954, from Mr. Busch tells that final negotiations for leasing the property had fallen through and that the deal is off.

So the Rock Landing quarry is once again opened to anyone who may want to lease it. The quarry is posted and no trespassers allowed.

Error in Waskey's Ad

In the last issue of R & M an error appeared in Waskey's ad on p. 99 where under the main caption *Shungnak Jade* the following also appeared (*Hydrous titano-columbiate*). As every mineralogist knows, jade is a silicate. In the ad no chemical formula was to appear—the one shown was a printer's mistake. The words had been set up for another ad and in some unexplained manner it found its way into Waskey's ad. Our apologies are extended to Mr. Waskey.

Touring Collectors Invited To Stop!

Editor R & M:

The writer is a retired Post Office clerk and a rabid mineral collector of more than 20 years. He has extensively traded with collectors all over the country and this is a cordial invitation to any collector touring the North West to stop at my place and view my collection of around 700 separate named varieties of minerals. He will be glad to give information of likely collecting spots of the North West. Tourists should plan to make a night stop at the West Pine Motel on Highway 410, at the West City limits. Theo. & Anna Beck, owners of the Motel, are also mineral collectors and they have in their office a wonderful collection worth any one's time to see. They'll put out the red carpet for any visiting mineral collector who stops at their place.

G. W. Weber
1320 Portland Ave.
Walla Walla, Wash.

Congratulations!

Editor R & M:

Please renew my subscription to ROCKS AND MINERALS. The new cover to R & M is a great improvement and the magazine gets better each year. Congratulations!

Millard H. Chandler
Apple Tree Lane
Oct. 15, 1953 North Chatham, N. H.

ATTENTION SUBSCRIBERS!

ROCKS AND MINERALS comes out once every two months as follows:

Jan. - Feb. out about	Feb. 10
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July - August, out about	Aug. 10
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Nov. - Dec., out about	Dec. 10

WHY NEW JERSEY IS A HAPPY HUNTING GROUND FOR THE MINERAL COLLECTOR

By MEREDITH E. JOHNSON
State Geologist of New Jersey

Paper delivered at third annual convention of Eastern Federation of Mineralogical and Lapidary Societies at Paterson, New Jersey, October 8, 9, 10, 1953.

To those in my audience who are not residents of New Jersey I should like to extend a cordial welcome on behalf of the State, and to express the hope that your stay may be a most pleasant one. Certainly in coming to Paterson for this meeting of the Eastern Federation of Mineralogical and Lapidary Societies you have picked a place that has already made many mineralogists happy. Paterson is justly famous as the source of many unusual minerals, and a part of that fame is certainly due to the fine collections of zeolites and related minerals which have been assembled in its museum. I think all mineralogists are therefore indebted to Mr. Casperson for his fine work in adding to these collections and improving the exhibits.

I hope that some of you will have a chance to travel around the State and will take the time to see the mineral exhibits in some of our other museums also; for there are fine displays of beautiful and rare minerals in the Newark Museum, in the museum of the Department of Geology, Rutgers University, New Brunswick; in the museum in Guyot Hall, Princeton University; and in the State Museum at Trenton. If there are others that compare with these, I hope that my ignorance of them be forgiven. Certainly I do know that there are many worthwhile mineral collections in other institutions of learning, not to mention those in the hands of private collectors.

But I have come here not to speak of collections, but rather of those places where interesting, rare or beautiful minerals may be found. In what other State of comparable size can you find 370 minerals and varieties? Where else can you find outcrops of 69 different geologic formations within a radius of 100 miles from a central point.

To the mineral collector, southern New Jersey is perhaps the least interesting part of the State, yet there is a real thrill in finding sky-blue vivianite in some dark clay or greensand; and who can deny the satisfaction that comes from finding beautifully crystallized specimens of pyrite and its orthorhombic counterpart, marcasite, in the sandy clays of eastern Middlesex County. As a further tip to anyone looking for the latter, just remember that iron sulfide is most frequently found in association with lignite, and lignite is common in the Magothy formation, in the Englishtown sand, and in the upper part of the Woodbridge member of the Raritan formation where it is exposed in the Amboy region.

Have you ever heard of Cap May diamonds? Of course they aren't really diamonds, but rather cut and polished specimens of clear quartz found on the beaches of the Cape May peninsula. I have seen a boxful of such specimens and they really exhibit a lot of brilliance and fire.

Large specimens of any mineral other than quartz are hard to find in southern New Jersey, since most of the material is in the form of sand or clay. Nevertheless you can find pebbles in the gravel which tell an interesting story, and one of the most beautiful mineral exhibits I have seen consisted of cut and polished specimens of chert, mostly collected from a sand pit near Delair, Camden County. As most of you know, the weathering of chert produces internal spots and rings of varied colors, and the shading and variation of these can be extremely beautiful. Again, I have found book mica in quartz pebbles of exactly the same type in every one of the Pleistocene gravel deposits of southern New Jersey. However, these finds have been restricted to the western side of the State and south of Philadelphia, and the suggestion is plain that they were all derived from one

formation—the Baltimore gneiss—which outcrops in a belt extending across the Delaware at Trenton. More thrilling still has been the discovery in sand pits as widely separated as Wayside in eastern Monmouth County, and Paulsboro in Gloucester County, of cobbles of quartz which could only have come from the Paterson area. I refer to the quartz surrounding rectangular, elongated crystal cavities after anhydrite, and described and well illustrated by Waldemar T. Schaller in Bulletin 832 of the U.S. Geological Survey, entitled "The Crystal Cavities of the New Jersey Zeolite Region". Though this material is, in itself, most interesting, the thrill in finding examples on opposite sides of the coastal plain came from the realization that it provided perfect proof of the fact that in the geological period during which the gravel terraces in southern New Jersey were deposited, some major stream which tapped the Paterson area, was able to change its course widely, and must therefore have deposited its load across a wide and fairly level plain.

But enough of geology! From here on I will try to stick to mineralogy.

James G. Manchester, in his fine report on, "The Minerals of New York City and Its Environs", lists the following minerals as found in clay beds in Sayreville, Middlesex County: amber, an impure siderite, diatomite, fulgurite (not a mineral of course, but the fused grains of sand depicting the passage of a lightning bolt through a sand bed), lignite, limonite, marcasite, melanterite, pyrite, turgite. I have seen most of those minerals myself, in the large pit operated by the Sayre & Fisher Brick Company in Sayreville, although I doubt that diatomite has been found there. A similar list of minerals may be compiled at several of the other large clay pits in eastern Middlesex County.

Manchester lists glauconite and vivianite as occurring at Shrewsbury, but though glauconite is a common constituent of many sandy beds and some clays, I think it is only fair to tell you that vivianite is much less common and I personally have only seen it in fresh excavations. I suspect that it is not a very stable mineral and that where it is exposed at the surface it rather quickly alters to one or more other minerals.

Manchester does not list copiapite, a hydrous iron sulphate, but I believe this mineral can often be seen in the pit of the Oschwald Brick Company at Cliffwood and occasionally in some of the other clay pits.

I doubt that mineral collectors would often be interested in sand grains, but close examination of some of the sands in southern New Jersey would reveal[1]/ the following long list:

Quartz	Muscovite
Glauconite	Biotite
Kaolin	Chlorite
Sericite	Zircon
Lignite	Microcline
Chalcedony	Orthoclase
Limonite	Albite
Ilmenite	Titanite
Leucoxene	Diopside
Tourmaline	Garnet
Magnetite	Spinel
Hematite	Epidote
Rutile	Hornblende
Sillimanite	Pyrite
Staurolite	Marcasite

The list is not given in any particular order, and probably is incomplete, but it illustrates the fact that many minerals in small size can be found in southern New Jersey.

Traveling north a little, we find at Trenton several varieties of crystalline and metamorphic rocks. In the Baltimore gneiss we find a bluish quartz which I am informed is indicative of its great age. We also find orthoclase, albite, anorthite, diopside, hypersthene, magnetite, ilmenite, pyrite and apatite[2]/. The Wissahickon formation consists chiefly of quartz, orthoclase and plagioclase feldspar, biotite and muscovite; but also contains magnetite, apatite, zircon, tourmaline, garnet,

[1]/ Wilkerson, A. S. and Comeford, J. E.: *Some New Jersey Glass Sands*, Bur. of Mineral Res., Rutgers Univ., Bull. I, 1948.

andalusite, sillimanite and zoisite. [2]/ The Chickies quartzite consists primarily of quartz with fairly abundant sericite and chlorite on the bedding planes; and the gabbro intrusive in the Wissahickon and Baltimore gneiss is typically a "hypersthene-augite-plagioclase rock, with accessory quartz, biotite, hornblende, magnetite, apatite, titanite, pyrite, pyrrhotite, garnet and orthoclase." Actinolite, chlorite and serpentine occur as decomposition products.

Some sixty miles northest of Trenton, the Manhattan schist occurs at the eastern edge of Jersey City and Hoboken. Exposures are extremely limited, however, and since much better occur across the Hudson River, I refer anyone interested in the contained minerals to the great city of New York. Adjoining the Manhattan schist in Hoboken, however, is a knob of serpentine making a rather abrupt hill known as Castle Point. The minerals found there in addition to the serpentine are talc, tremolite, magnesite, brucite, dolomite, and chromite. Manchester lists several others as coming from Hoboken and nearby railroad tunnels, but the minerals seen in the latter would be in the Palisades diabase.

Northwest of a line connecting Trenton and Hoboken is a broad belt of red rocks interrupted occasionally by ridges or hills of trap rock, a dark gray, or dark greenish-gray rock which, at the surface, is usually weathered to a seal-brown color. It is in these rocks that some of our most interesting minerals occur.

But first, let us consider the red rocks. In the central and western parts of the belt, these rocks are fine-grained and consist largely of shale. Perhaps the most interesting mineral found in these rocks is glauberite and it is indicative of the arid conditions which are believed to have prevailed during deposition of the containing rocks. Gypsum, hematite and calcite are not uncommon, and barite has been found in several localities. Differential thermal analyses of the red shale have shown that it is composed largely of illite, a clay mineral more or less intermediate in type between kaolin and montmorillonite. The arkosic sandstone of the same belt consists largely of quartz and feldspar, but does, of course, contain small percentages of muscovite, epidote and a host of other minerals. Also, along the northwestern boundary of this same belt of rocks is a series of disconnected conglomeratic beds containing, in places, a large percentage of quartzite boulders; in other places, an equally high percentage of limestone boulders—in part consisting of crystalline calcite—;and in still other places consisting almost exclusively of granite gneiss with predominant quartz, feldspar and ferromagnesian minerals. But of greater interest than these are the metallic minerals associated with the intrusive basaltic magmas. These are the "showy" copper minerals azurite, malachite and chrysocolla, along with chalcopyrite, chalcocite, native copper and a little wire silver. Even gold has been found in tiny amount associated with the copper ores at Griggstown and Arlington. It has been a long time since any of the old copper mines and prospects have been worked, but I can personally vouch for the fact that some of the copper minerals can still be collected in the bluffs adjoining the old Schuyler mine at Arlington, on the dump at the entrance to the abandoned Griggstown mine, and at a dozen and one other localities mentioned by Herbert Woodward in our Bulletin 57, "Copper Mines and Mining in New Jersey".

Now I think it is time to mention Paterson again, for here in the same basaltic rocks that were the source of the copper minerals just mentioned we find an amazing variety of zeolites and related minerals. Eliminating duplications in his list, I find that Manchester lists some 70 minerals and varieties. And at that he overlooked one mentioned by J. Volney Lewis in his article in the Annual Report of the State Geologist for 1907: namely, hornblende. Schaller's scholarly report deals primarily with the crystal cavities found

2/ Bascom, F. *et al*: Trenton Folio, U. S. Geol. Survey, 1909

in the basaltic rocks, but he lists all the commoner minerals under three headings:

Primary	11
Hydrothermal metamorphic (not including varieties, but including one mineral from Bergen Hill)	55
Weathering	7
Total	73

His report also includes a chart in which the minerals are grouped under the headings: lava minerals, saline minerals, and zeolitic rock minerals, and the chart illustrates very clearly Schaller's conception of the manner in which these were altered during successive periods of time.

I should like to be able to tell you that you can now rush out to the nearest operating quarry and collect 70 varieties of minerals. Unfortunately that is far from the truth. Even if you were permitted to look for minerals—and permission must always be obtained—the chances are you would have to settle for something less than a dozen, for it is only rarely that the quarrying operations result in disclosing a large variety at any one time. Even so, however, it is an unusual collector who is not made happy by the discovery of one good specimen of a relatively rare mineral, and your chances of such a discovery are good.

Schaller lists the localities from which his specimens came, and not one of the quarries he mentions is operating under the same name today. However, you can without difficulty locate the quarries formerly operated by the Paterson Crushed Stone Company on opposite sides of New Street and I can personally testify that for the period of their operation they did indeed constitute a happy hunting ground for the mineral collector. Today the operating quarries probably provide better and more rewarding opportunities if permission can be secured to visit them.

Next, let us consider the wide belt of ancient crystalline rocks which constitute the Highlands of New Jersey. In general these are of four types; (1) faintly banded rocks of granitic type; (2) a dark gray, foliated, crystalline rock having a composition similar to a diorite; (3) white or light-colored crystalline limestone and associated but highly altered shales, sandstones and conglomerates; and (4) infolded sedimentary rocks of considerable age, but younger than the ones just mentioned.

The granitic rocks, as would be expected, consist chiefly of quartz, feldspar and some ferro-magnesian mineral, and, in general, are of most interest to mineralogists where they contain the less common minerals, or where they are pegmatitic. Those of you who have seen the coarse-grained granite near Pompton Junction would agree, I think, that the combination of green and pink microcline with quartz and plagioclase feldspar, is indeed beautiful; and close inspection will also disclose magnetite, titanite, biotite, chlorite and epidote. Consider also the Ragged Mountain pegmatite in Warren County where individual crystals of microcline, perthitic orthoclase, and hornblende or augite often exceed two inches in maximum diameter and may be as much as a foot long. I personally think such crystals are rather spectacular. Not far away—in fact only a mile south as the crow flies—book mica, with individual crystals ranging up to five inches across, was once mined on a small scale, and even today I think one might find some coarse-grained phlogopite there.

Almost any dump adjoining an iron mine—and many have been worked in the Highlands area—is good "pickings" for the average collector. You can always find magnetite, pyrite, hornblende, augite, biotite, quartz and one or more feldspars; and usually, close inspection will reveal apatite, garnet, titanite, and perhaps pyrrhotite. Perhaps I should mention also that the feldspar may be, and frequently is oligoclase; and that diopside is not uncommon in the granitic gneisses.

Type two of the crystalline rocks, the dark-gray foliated gneiss, is probably least interesting to the mineralogist. It is seldom coarse-grained, and usually consists of oligoclase and hornblende, with diopside sometimes replacing the horn-

blende, and biotite and magnetite common constituents. Scapolite is common in rock of this type where it adjoins the Franklin limestone.

Of small interest also are the infolded sedimentary rocks. These consist predominently of only slightly altered limestone, sandstone and shale, and though I have seen citrine in metamorphosed shale or slate, the rare fossils in these rocks are of far greater interest than the minerals.

I come now to the white or light-colored crystalline limestone and associated but highly altered shales, sandstones and conglomerates. These are the rocks of greatest interest to many mineral collectors because of the great variety of minerals that may be found in them. A glance at the geologic map of the State will show that the largest area underlain by the white limestone is in northern Sussex County, and that it passes through Ogdensburg, Franklin and McAfee. Most of you know that at Ogdensburg and Franklin are two of the most famous zinc mines in the world—famous because of the size and richness of the ore-bodies; and famous to mineralogists because of the unique ore minerals, and the host of associated minerals. Charles Palache[3]/ has listed 159 minerals and varieties from this area, of which "nearly 100 are found only in this area". Since his fine and well-illustrated report is now available by purchase from the Superintendent of Documents, Washington, D. C. for 75 cents, I will not attempt to describe or list here any of those minerals; rather, I will repeat what many of you already know: namely, that you cannot enter the property of the New Jersey Zinc Company for the purpose of collecting minerals without permission. The management has been extremely generous in its handling of the many requests it receives from collectors, but I think all of you will realize that unauthorized collecting would disrupt their work and might well endanger some of their personnel. Actually, you don't have to visit the mines to find interesting and rare minerals. There is an old dump south of the Franklin mine where good specimens can still be found, and you can pick up quite a variety of minerals in some of the nearby quarries. For example, a third of a mile east of Hardystonville, in a large abandoned quarry there is a good exposure of a scapolite gabbro; and on the opposite side of the quarry white veinlets of natrolite can be found in a kugel minette dike. A mile and a quarter farther to the northeast, in another large, abandoned quarry, one can find good specimens of chondrodite, graphite, pyrrhotite, diopside and scapolite. Again, just north of McAfee, in the large quarry formerly operated by the Bethlehem Steel Company for flux stone, one can find beautiful large crystals of green apatite; also fluorite, titanite, serpentine and a dozen or more common minerals.

Just three miles east of Newton there is a large quarry now operating where I have also seen apatite: also chondrodite, tourmaline, spinel, pyrrhotite, diopside, galena and again, a dozen common minerals. Also, just east of their property I have seen both sphalerite and galena in the white limestone.

The Raritan folio[4]/ describes several additional occurrences of the white limestone, but from the standpoint of the mineral collector, certainly one of the best places to look for rare or somewhat unusual specimens is the large dump of rock discarded from the quarry formerly operated by the Edison Cement Corporation about 1½ miles northwest of Oxford. There, in less than one hour, I have found calcite, quartz, serpentine, tremolite, sphalerite, galena, chalcopyrite, pyrite, hornblende, graphite, biotite and ankerite. Manchester's list for the same area (but including the Washington mine) contains 22 minerals.

Another good place to hunt minerals is the Andover-Sulphur Hill mines, about

3/ Palache, Charles: *The minerals of Franklin & Sterling Hill, Sussex County, New Jersey*, U. S. Geol. Survey Prof. Paper 180, 1935.

4 Bayley, W. S., Salisbury, R. D. and Kummel, H. B.: *Raritan Folio*, U.S Geol Survey, 1914

a mile and a quarter north of Andover. There, in the face of the Sulphur Hill mine, one can collect sphalerite, galena, magnetite, pyrite, pyrrhotite and chalcopyrite; and in the surrounding rocks one can find quartz, feldspar, biotite, chlorite, hematite, epidote, kaolin and other minerals.

. Finally, this paper would not be complete without mention of the unusual dikes near Branchville, Beemerville and Libertyville in Sussex County. Charles Milton[5]/ is the most recent of a number of geologists to study these rocks, and there no longer is any doubt that they are genetically related, although differing in detail. All are characterized by a high alkali content and the mineral nephelite is prominent in several of them. Hackmanite, a variety of sodalite which fluoresces orange, has been noted in the Beemerville dike, and orthoclase, biotite and magnetite can be detected as small or tiny grains. Milton found natrolite, andradite and allanite in a smaller dike of nephelite syenite occurring about two miles north-northeast of Branchville.

5 Milton, Charles: *Dikes of special petrologic interest,* Guidebook for 18th An. Field Conference of Pa. Geologists, 1952.

Ultra-Violet Products Enlarges Plant

Ultra-Violet Products, Inc., of 145 Pasadena Avenue, South Pasadena, Calif., has just completed a 10,000 square foot addition, bringing the company's total plant capacity to 20,000 square feet. Eldred C. Klute, of San Gabriel, was contractor for the addition which was built at a cost of $35,000.

Ultra-Violet Products is the West's largest manufacturer of ultra violet lights and the sole manufacturer of the Mineralight used in tungsten prospecting and ore sorting.

The new addition will house an expanded research laboratory and provide increased production facilities for the company's Blak-Ray inspection lamps which are now in tremendous demand for industrial use.

Also included in the new building is a display room featuring fluorescent mineral specimens collected from all parts of the globe. Specimens are from the collection of Tom Warren, president of Ultra-Violet Products, who ranks as the world's biggest "rock hound" with a collection weighing in at more than 40 tons.

The display room is open to the public at all times during the plant's working hours.

Fine Friendships Made!

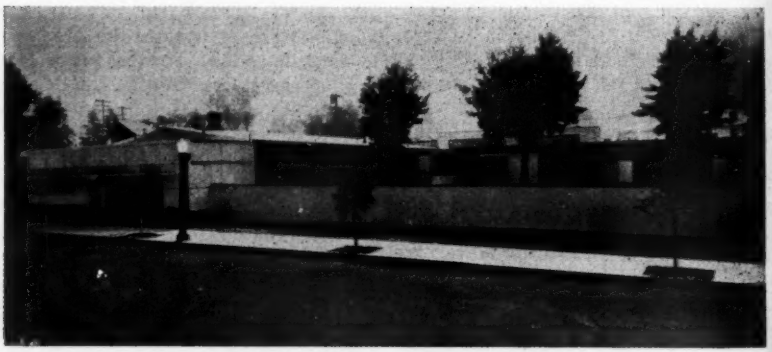
Editor R & M:

R & M has given me a great deal of enjoyment.

Not the least of the benefits has been the forming of some fine friendships with other subscribers.

Harold M. Curtis, Jr.
108 Ash St.
Stoughton, Mass.

Dec. 21, 1953



Newly completed 10,000 square foot addition at Ultra-Violet Products, Inc., South Pasadena, Calif., will house an expanded research laboratory and provide increased production facilities for company's Blak-Ray inspection lamps.

MILLERITE . . . WILL-O-THE-WISP!

By K. E. GIBBONS
6421 Hobart Avenue, St. Louis 14, Mo.

I would like to state first of all, that I am *not a* technical rock-hound. By that, I mean, I have been collecting rocks for less than 2 years, and while I have learned a lot in that time, I do not feel that I could hold my own very long in a technical discussion with an old timer at this rock-hound business. My interest in collecting precious gemstones and rare mineral specimens, lies more in the thrills and fun I derive from the quest for my quarry, than in the thrill of ownership and I will attempt to prove my point at the end of this article. Many, many times I have labored long and hard on the trail of some elusive mineral, and after eventually finding it, turned right around and gave it away to some particular friend who might have been drooling over my shoulder at my late find. So you see, to me, ownership or thrill of possession is a result of my hobby, rather than my actual primary hobby. I suspect that a lot of the folks who read this article will wince at that statement, however, it is my true feeling in the matter, so let the chips fall where they may.

In May 1951, I found a rough diamond at Murfreesboro, Arkansas, while on vacation. That find is another story, but it started me off as a rock-hound.

About one year later I joined the St. Louis Mineral & Gem Society of St. Louis, Mo. During the course of club meetings and association with the other club members I began to hear vague references to a mineral called "Millerite." I talked to anyone and everyone in the club who could tell me anything at all about this mysterious mineral. I learned that Millerite is native Nickel Sulfide, NiS a brassy-yellow, crystalline mineral, named after W. H. Miller, Mineralogist at Cambridge University, the man who first discovered it. But no one, it seemed, knew very much about it, except that it resembled "hair," and certainly none of the club members had even a tiny specimen of it in their collections. I began to search thru rock and mineral books, Geological Survey Bulletins and the like, in an effort to learn more about Millerite. In almost every instance a description of Millerite would state, usually in about 2 sentences, "hair-like, brassy color, Nickel Sulfide," period. Not much of a description for an amateur among amateurs to go on. However, one day, I was in Keokuk, Iowa, hunting the rare geodes that contain the small cubic fluorite crystals, sphalerite crystals, and the beautiful pink calcite scalenohedrons. Late in the afternoon, I picked up a small geode about 2½ inches in diameter and approximately 4 inches long. Upon examining the outside of the geode, I noted that it was all intact, no holes or cracks, and was evidently hollow inside because of its light weight. I split the geode in half and peered anxiously at the interior. There were 2 small wads of hair-like looking material in one half of the geode. Hair-like?! I froze in my tracks! Where had I heard that description before? Suddenly it came to me . . . hair-like . . . brassy or bronze color . . . Millerite! Cautiously I looked again . . . yes it was sort of a bronze color, certainly hair-like, and the hairs were attached at both ends to small calcite crystals! I could hardly believe my good luck. Taking off one of my wool hunting shirts, (I had two shirts on because it was a bitterly cold day) I wrapped the geode very, very carefully and put the shirt right on the seat beside me in the car. All the way back to St. Louis, I cradled my prize specimen beside me on the front seat of my car. No species of anything, *ever* received such tender care and handling, as did that geode.

Upon arriving home, I immediately telephoned an associate club member and friend of mine, Dr. Albert Frank, Geology Professor at St. Louis University. He was elated at my find and said he would drop by my house that evening to see my Millerite specimen at first hand. That evening when he arrived;

"Here it is, Doc, a dandy Millerite specimen," I said, handing him my prize

very gently.

Doc looked at it, pulled his ever-present lens from his pocket and looked it over very carefully. He looked at me a little queerly and said, "Do you have a pair of tweezers?"

I said, "Why, sure, but what do you want tweezers for?"

"Brace yourself my friend," said Doc, "but I don't believe this is Millerite. I thing its organic and I want the tweezers to pull a hair or two out, and see if it will burn."

I looked at him incredulously. "B-b-but, Doc?" By this time Doc had already pulled several hairs out of my prize geode and was putting a match to them. They went up in smoke!

Doc looked at me and said, "I'm sorry, Ken, but your Millerite specimen is nothing but a bug nest!"

My heart sank, I pleaded and threatened, I even pointed out that there were no visible holes in the geode before I broke it open, but Doc was unmovable. Bug nest!! I had lugged a geode with a bug nest all the way from Keokuk Iowa, 200 miles in the belief that I had found a rare and valuable specimen! A little later when I had calmed down a bit, I realized that Millerite is a metallic mineral and as such will not burn, . . . melt possibly, but not burn.

A few days later, I was the laughing stock of the club, private, polite laughs to be sure, but nevertheless laughs, and at my expense. To make things worse, to this day, my wife,Sally, keeps that blankety-blank bug nest specimen in an honored spot in our display case. Women . . . phooey!

As the days and weeks went by I became more and more determined to find the *real* Millerite. I began pouring through volume after volume of Survey Bulletins, Science Reports, etc., in an effort to run down the elusive Millerite. One day I heard that a man named Mr. Boley Brotherton of Kahoka, Missouri, was a successful hunter of Millerite. Through two fellow club members, Mr. and Mrs. Roy Kleis of St. Louis, friends of Mr. Brotherton, arrangements were made for me to meet him, which I did. He took me to a rock pile near Keokuk, Iowa, where rock had been dumped after being blasted from the Mississippi River bottom. Boley had shown me a few specimens of Millerite at his home and so *now* I *knew* at last what Millerite *really* looked like. Our trip was successful and I returned home with a couple of prized Millerite specimens! Success at last!

In my research of the subject, I learned that St. Louis was also supposed to be a source of this rare mineral. Accordingly I started visiting and examining the local quarries one by one. As of this date, I have found two quarries in St. Louis that contain Millerite in specimen size; The Rupprecht Quarry in south St. Louis, contains Millerite in association. with Fluorite, Barite, Calcite, Chalcedony, Pyrite, Quartz, and Sphalerite. I have several specimens with all of these minerals on the same specimen. They are very odd and colorful. Very rarely is Millerite found as inclusions *in* fluorite. Usually it is in capillary hair form *on* the fluorite but even these are very rare. The most common form of Millerite, if it can be called common at all, is found as inclusions in calcite.

The Hamburg Quarry on the West side of the Missouri River, 5½ miles south of Highway 40, is in the River Bluffs. This quarry has not been worked since the late 1930's and although I have found good specimens here at times, future hunts at this quarry will produce very little Millerite until the cliff face is blasted or some other means is found to bring down more rock for examination.

In the St. Louis area, as in the few other localities where Millerite is found, it is usually found in relatively small quantities, although a few specimens have been collected in which the cavities have been practically filled. The mineral is quite widely distributed throughout the St. Louis and Keokuk localities, but only *occasionally* are really *good* specimens found. The best specimens from the St. Louis locality, came from a quarry which

has been filled in for years, at Second & Victor Sts., known as the Victor St. Quarry. This source therefore no longer exists.

The knowledge I have gained from my quest for Millerite leads me to state the following facts concerning this mineral, in the belief and hope that they will be of some help to my fellow rock-hounds; Millerite is generally found in cavities. It occurs in bunches or in fibre-form attached to the walls of vugs and protruding into the interior of the cavity, or it may occur as small hair-like fibres enclosed by calcite and less often fluorite, giving the calcite or fluorite the appearance of a "rutilitic Quartz."

Millerite's original color is brassy-yellow. However, if it is exposed to the atmosphere, its color turns to a dark green because of oxidation. Occasionally Millerite is found that is jet-black, which is usually caused by a coating of Linnaeite. I have found Millerite occasionally that is silver in color and in the form of the old-time silver Christmas tree tinsel . . . a very interesting formation. As yet I am unable to account for the silver color, but am still seeking the answer. All of these colors, except the black, exhibit a very high metallic lustre.

Although Millerite in the St. Louis area occurs in long narrow prisms, it can and does exhibit a variety of form. For the purpose of classification of these forms, we can call them, tufts, hairs, and prism aggregates.

HAIRS OF MILLERITE

The hair-like form of Millerite has been found in St. Louis at the Victor St. Quarry, in years past, and very recently by myself in the Hamburg and Rupprecht Quarries. These long hexagonal prisms are usually mere fractions of a millimeter in thickness. These human hair-like forms of Millerite, are usually inter-woven, between the vug crystals and/or in the crystals themselves, sometimes so closely as to resemble a spider-web or a bunch of human hair. They are very delicate but are not as brittle as one would suppose, having a certain resiliency entirely unexpected in a mineral of this type.

TUFTS OF MILLERITE

Tufts of Millerite are composed of fibres or hairs of Millerite and are similar in size, shape and color to the previous mentioned form. The needle-like prisms are united at a common point on the wall of the vug and radiate, either outwards into the cavity or they many lie flat against one of the crystals. In this form of occurrence the fibres vary in length from 1/8" to 2½" and show a six-sided prism under the microscope. Wherever these tufts appear as inclusions in large quantities, they cause the Calcite to appear black and opaque. Frequently the center or lower portion of the calcite crystal will appear black while the upper or outer part of the crystal will be clear and entirely free of Millerite. This would seem to indicate a possibility of two generations of calcite, wherein the second generation of calcite was probably deposited over the minute crystals of Millerite and the tarnished coating that probably covered the surface of the older calcite. Occasionally calcite crystals are found in the vugs that show barite, pyrite, and Millerite, all inclusions in the same crystal, indicating that the Millerite, barite, and pyrite were all formed prior to the calcite formation. These crystals make very interesting specimens.

PRISM AGGREGATES

This form of Millerite as the name indicates, is merely a group of the Millerite crystals arranged together side by side and all running in exactly the same direction. One might possibly say, this is the form that the massive type of Millerite takes, such as is found in the Lancaster Gap Mine in Pennsylvania.

In my Millerite collection, I have vugs ranging in size from ¼" to 9" in diameter. Occasionally Millerite is found on quartz, but it is most frequently found associated with calcite.

You will recall that at the beginning of this article, I stated I would prove that my hobby is not so much the actual collection of rocks and minerals as is the search for them. Well, now that I have a very good collection of Millerite I am

I have personally found Millerite in the following formations:

Nucleus Type

Fan Shaped

Free Hairs between crystals in vugs and geodes

Prism aggregates (massive)

Christmas Tinsel type (usually yellow in color)

going to dispose of it as a collection by advertisement in the very near future, and then look around for some other hard to find item for which to search. I hope that at least a few of the folks that read this article will recognize in my hobby, possibly some resemblance to their own feeling in regard to the quest for and possession of, minerals and rocks. At least I hope my readers do not ostracize me from the rock-hound fraternity!

Probably you have heard the old axiom, "Gold is where you find it." Well . . . to me, there is no other saying that so aptly applies to the Will-o-the Wisp, Millerite. Because truly, "Millerite is where you find it," and usually in the most unexpected places.

My quest for and experience gained in my search for Millerite, has I feel, given me a good working knowledge of this mineral. So if I can help the readers of this article by answering specific questions regarding Millerite, I will be only too glad to do so. I would like in closing, to inject a word of caution to *all* Millerite hunters . . . Beware of Bug Nests!!

Mineral Exhibit in Idaho

A permanent exhibition of collectors' (rock-hounds) minerals and gems has been set up in the Washington Hotel lobby at Weiser, Idaho, by the Chamber of Commerce and the Snake River Gem Club.

The Lower Valley, Hell's Canyon, and the Salmon River are publicised by gem hobby magazines as one of the nation's happiest hunting grounds for collectors.

Materials on display, and available in the region, include agates, petrified wood, garnets, sapphires, pan gold, ore samples such as copper, lead, silver and tungsten.

Most of the initial display was assembled by John Glass, geologist, who is establishing a retail and mail order rock business here.

The area affords also Indian artifacts such as arrowheads, spearheads, and stone tools.

Arbitrarily classed with collectors' minerals are also many relics of the old west. The ghost mining camps have been pretty well stripped of such choice items as gold scales, bar accessories, kerosene chandeliers, but diligent scroungers still make long-chance finds. Desert glass (turned amethyst color by long exposure to the sun) is still found where casual rubbish combers fail to look. All sorts of steel and wood mine equipment parts are found in good to fair condition.

Believe it or check up on it, collectors go after no less then 250 kinds of sand. The star item at Weiser is monazite, which contains thorium, which activates the geiger counter.

Best Read Magazine!

Editor R & M:

Your magazine is one of the best-read ones in our library. The many favorable comments I heard last year as Librarian are an indication that you are meeting the needs of all interested in rocks and minerals—whether they be mineral collectors, sand collectors, or cut and polishers.

Mrs. Geo. H. Learned, Jr.
Concord, Calif.

Feb. 2, 1954

Made 50 Trades!

Editor R & M:

I am enclosing three dollars to pay for an extension of my ad in ROCKS AND MINERALS which has been the best venture I have ever made in the way of trading specimens.

I have made about fifty trades and have received many very fine specimens of minerals which are a welcome addition to my collection. I have many more of the same type of rocks so I am hoping I can make many more of the same kind of trades.

Alex. Best
Kennewick, Wash.

Jan. 11, 1954

SAN DIEGO NOTES

By COMMANDER JOHN SINKANKAS

EDITOR'S NOTE: This is the second of a series of articles by Commander Sinkankas about his collecting adventures while he is serving aboard a U. S. Carrier as Executive Officer. This ship, a light aircraft carrier, is enroute to the Far East where it will spend considerable time and in doing so, will visit many ports. We hope that you will find pleasure in reading these little episodes out of the life of a regular naval officer who follows the sea professionally but whose off-hours interest is the world of minerals.

From the sea, San Diego (Calif.) rises gently upward upon a series of crescent-shaped hills which begin at the abrupt cliffs of Point Loma and then disappear in the direction of Mexico. The first impression is one of white and brown, the first from the houses which cover and hug the hillsides, and the second from the barrenness of the ground which has not been populated as yet. The semi-arid climate is not conducive to the growth of much natural vegetation and consequently, almost all greenery is confined to those places where the hand of man has planted it.

Lt. Harry Thorington met me at the dock at the Naval Air Station and placed his Lincoln at my disposal. Through his courtesy I was able to visit Plummer's and Superior Gems and Minerals, and in between, see for myself the phenomenal growth of this thriving city since the last time I visited in the early part of WW II.

PLUMMER'S

I found Roy Plummer's place of business to be on the seaward side of Point Loma, practically within stone's throw of the water. He has built an exceptionally neat stucco sales shop next to his residence in a quiet and prosperous neighborhood. There was no difficulty in parking and from all standpoint, it was a most convenient place to stop. Several large windows let in the sunshine to provide excellent illumination during the daytime. Inside all was in the neatest possible order with glassed cabinets to display fine mineral specimens, rough, cut gems, etc. All items were clearly labeled as to identity, place of origin and price.

Roy specializes in only one thing: minerals, both rough for cutting and mineral specimens. He does not handle equipment, accessories, or other supplies. He believes that this policy allows him to give the best possible service with the least expense to the customer. His selection of material was excellent especially in regard to mineral specimens. Of the latter, the most interesting and most famous are the tourmaline specimens now being mined once again from the famous HIMALAYA MINE, one of a group of mines in the Mesa Grande-Pala area of San Diego County, Calif. Roy had a rather large selection of loose xls, terminated and unterminated, quartz xls with penetrating tourmaline xls, facet-quality and cab-quality xls, as well as other interesting materials which are now being produced.

In the early part of this century the Himalaya Mine was a large producer with much of the output of their famous tourmalines going to China and to domestic cutters. Splendid museum specimens were also produced in good quantity and many of these currently grace the exhibits of some well-known scientific institutions. Mr. Ralph R. Potter is the owner and operator of the mine and lives at 7924 Normal Avenue, La Mesa, California. He is vigorously and scientifically working the mine and is in a position to once again supply the market with these renowned tourmalines.

For the benefit of those readers who are not familiar with the characteristics of California tourmalines, a word about them may not be amiss. In size, the xls run from slender needles to thick multiple xls inches across. Almost invariably the larger specimens are badly flawed and suitable only for carving or cabochon work. Xls are mostly a lively pink remarkably free of the brownish tinge which often is found in Brazilian material, thus xls of suitable diameter can be best cut to place the table across the xl and take advantage of the deeper color afforded in the direction of the long xl axis. The

reddish and pinkish xls are most often terminated with a simple basal plane while those of other colors are apt to be richer in faces, often entirely pyramidal with no trace of a base. Other colors are green, yellowish green, grayish, and sometimes almost colorless. Watermelon zoning is less common than alternating bands of color along the length of the xls. A common color scheme is one in which the whole xl is pink except for the extreme tip which may be greenish or bluish. Flaws are most often veil-like and tend to be uniformly distributed. Basal cracks are also common. Excellent catseye material is rare but occassional specimens are found in which the tubes are dense enough to create a good streak of light. The most interesting cut stones of Himalaya material are green and pink bi-colors both in faceted gems and catseyes. An excellent treatise on the pegmatite dikes and gem mines of San Diego County has been recently published by the Division of Mines, State of California, and can be purchased from them at the Ferry Building, San Francisco by mail.

SUPERIOR GEMS AND MINERALS

Leaving Plummer's I made my way over to San Diego north of Balboa Park to visit the Olmsteds who operate this pleasant and thriving establishment. They are at the end of Park Boulevard in a quiet neighborhood where again parking was an easy task. Their store is one of a row of typical shops such as one sees in any city. A number of attractive mineral specimens were placed in the front window and an adequate sign announced the name of their business. The interior was neat and clean, well-lighted, and equipped with business-like glass display cases with excellent interior lights. The back of the store was taken up with lapidary equipment and a workshop. When I walked in a small group was engaged in the typical chatter of fellow enthusiasts, discussing techniques, new material, forthcoming field trips and so on, very pleasant and very informal. The Olmsteds were both cheerful, polite, and affable, like Roy Plummer and others I have met before in California, they greet strangers on the assumption that they are friends unless proven otherwise.

The Olmsteds have taken over a somewhat larger field of merchandising than Plummer's, not only are rough materials handled but also cut gems, finished jewelry, lapidary supplies, and other related items. The emphasis in their shop seems to be pretty generally spread over the whole field but perhaps a little greater stress is placed on a rather fine assortment of cut stones which in both the case of Plummer's and Superior seemed very reasonably priced indeed! In the former for example, I picked up a benitoite of about a third of a carat for $4.00 and at Superior, an essonite from the Himalaya Mine of several carats for the same price. Also at Superior I purchased a fine xl of catseye tourmaline which should finish into one very large stone. At Plummer's I went overboard on the tourmalines both for carving purposes and for faceting.

At Superior I noticed several extremely large greenish turquoise cabs from Nevada material, these were to mention a few, of 230, 336, 350 carats in size and were priced in the neighborhood of $40.00 to $60.00. An excellent Brazil rose-quartz sphere of about ⅜" diameter with a good star was selling for $5.00. Upon inquiry, I found that both Plummer's and Superior farmed out their cutting work since it was simply impossible to do any themselves and still find time to wait on customers behind the counter.

SUMMARY

In general, I was very favorably impressed by both stores visited. I liked particularly the neatness and cleaniness of both establishments, the friendliness of the proprietors, and the generally low prices asked for most of the material. Both stores had most standard items in faceting and cabochon materials but tended to be short in some items usually considered standard such as rhodonite for example. If you are in San Diego sometime, I commend both stores to your attention.

Incidentally I ran into Mr. Ritchie of Great Western at Superior and had a most pleasant chat. He as you may know, puts out the Great Western slabbing saw which is in my opinion, the most scientifically designed saw on the market.

HUNTING AGATES IN SCOTLAND

By SANDY RAMSAY

1015 Aikenhead Rd., King's Park, Glasgow S4, Scotland

The Glasgow 'Fair' holidays saw us off in my pal's (Alec Galt) 8 H. P. station wagon, in decidedly un-'Fair'-like weather. The sun shone as if to bid us an auspicious beginning as we set out for my home town, Kirkcaldy, the "Langtoon" of Andrew Fairservice in Scott's Rob Roy. Kirkcaldy, as anyone in Kearny, New Jersey, will tell you, is the linoleum manufacturing center of the world, and is in the county of Fife, Scotland. Fife has a peculiar reputation in Scotland, and its inhabitants are called 'fly' Fifers. The best tale I know about ourselves is the one where it is said the crows fly backwards when in Fife . . . just to keep the dust out of their eyes . . .

In Kirkcaldy, we were given a few localities and next day (Sunday), we set off for the Ochil Hills, arriving at the Path of Condie, Perthshire, in the early afternoon. Here we contacted a certain person, who was reluctant to impart the locality to us, but finally pointed to a spot up the pass. Hours of search failed to reveal any agates, and then it dawned on us, that to these very religious people, we were breaking the Sabbath, and so were given the wrong directions, so we made off towards Perth, decided to carry on a bit further as we wanted to get into Dundee early on Monday.

In Juteopolis, (Dundee), we contacted the curator of the Art Galleries & Museum, Mr. Boyd and his amiable assistant, Mr. Easton, who gave us free run of the place. They have a very fine and comprehensive display of Scottish agates, but their mineral show is no good, though I noticed an excellent display of sandstone concretions from Glamis, the home of the Queen Mother. These are called in this country, "Fairy Stones" as opposed to the name of "Fairy Crosses" for Staurolite twins.

Mr. Boyd is very interested in fluorescence, but they have neither long or short wave lamps in the museum, but I have promised them a show after the one I am giving to the Royal Geological Society of Glasgow during the winter. This will entail a lot of hard work, but I don't care, I have Ernie to do the grafting for me.

Arriving in Montrose, Mr. Low, the local expert, told us that we could expect to pick up agates all along the coast from Ferryden to Lunan Bay. However we did very poorly until we met a Glaswegian on holiday there, Mr. Osborne, who has done a lot of cutting and polishing in the past. He took us out one day and from there on, we started to fill our bags with agates, mostly bits and pieces, but often complete stones. Our best places were Usan (Oosan), near Lunan Bay and St. Cyrus. Unfortunately at St. Cyrus the agates are found in the cliffs, and one needs to be an expert climber to get at them.

On the Sunday, Mr. Low took us to his 'hidey spot' and though the tide was in, we found about 2 dozen agates. On Monday we went with some campers at St. Cyrus up the Cliffs, at least my pal, Alec, did, as owing to the size of the chest I've grown in later years, climbing is out for me. Here some of the kids got in a jam and Mr. Scott, one of the campers, made quite a thrilling rescue, cutting steps in the rock, to enable the youngsters to decend.

At Usan, Alec got very friendly with the locals, and we were told about the great storm of 1708, when a Dutch expedition to Curacoa was wrecked on the coast. For some time after this goods were washed ashore, and amongst articles collected by the locals were glass bead (all sand worn) and bricks. Mrs. Sheena Watt, of The Village, Usan, Angus, gave us a few beads, of which she has two strings, also a brick . . . this brick was given by Alec to Mr. Boyd, of Dundee, on our return there with a newspaper account of the wreck. I will get this clipping from Mr. Boyd to send to R & M will also send R & M one of the beads (they are known locally as 'Catesou'

beads, a corruption of the word Curacoa).

In Montrose we visited the local Natural History & Antiquarians museum, and what a surprise . . . Here, in a wee poky building we found the best mineral collection outside the large museums. There were two displays of agates, one cut and polished by Lord Gray of Kinfauns Castle and presented to the museum by Lord Panmure in 1844, consisted of 875 specimens, including a magnificent series of moss agates from Afghanistan. The other display was of local agates, and though poorly arranged had some beautiful specimens amongst them. These had been presented by local cutters, all hand cut and polished, some of them by our friend Mr. Low.

Tiring of the almost incessant rain of Montrose, we went to Fife, to Kirkcaldy, stopping at Perth to see Mr. Davidson of the Perth Museum. He, also, we found to be very interested in fluorescence, and he had a long wave Mercury vapour lamp that wasn't working, but Alec, an Electrical & Mechanical engineer, soon had that repaired. Mr. Davidson told us that when the heather was burnt on Kinnoul Hill, a lot of quartz xls were found and offered to take us up there to the Agate location. We were about to start off when Jupiter Pluvius opened up a barrage, a real cloudburst . . so that was that.

In Fife, our first trip was back to the Path of Condie and here we hit an agate patch, but the rock was so rotten that even the agates were crumbling, but we got sufficient to show us that the locality was good if we could get sufficient time to explore it thoroughly.

Another name on our list, Pebble Jock's quarry, seemed promising, the word 'pebble' in Scotland being synonymous with agate, but no dice, not even a glimpse of the agate lava. So on we sped to Balmerino, Fife, on the shores of the Firth of Tay. The tide here was in, but we picked up some very promising bits and pieces, so we decided to come again the next day.

At Balmerino again, we were very disappointed, I picked up eight small agates and the usually lucky Alec zero, consequently we carried on to St. Andrews the famous golf town. Here, again we found not a single agate, so we packed in for the day and made for Kirkcaldy.

Next day, the last of our holidays, we made for Edinburgh via the Queensferry's. Here we got quite a surprise, as traveling across in the ferry we spotted a battleship, which Alec, an expert, declared to be American, and sure enough, landing at South Queensferry we saw dozens of gobs on shore leave. On inquiry we found the ship was named after the State where the tall corn grows,—it was the Iowa. I jumped down off the car and picked up a tin of sand from underneath the Forth Bridge, near where the Iowa lay.

On to Edinburgh, to the Royal Scottish Museum, where we were unfortunate enough to miss Dr. Watterson and Mr. Turnbull, but we had another look at Heddle's magnificent collection of Scottish agates and realized how poor our own specimens were.

And so to Glasgow.

A few weeks later I went again to the Path of Condie (in the Ochil Hills) with my pal, Alec, in Archie Forrest's car. Alec had no waders, so he borrowed my rubber boots and went upstream with Archie, leaving me to poke about at a most unlikely exposure. After a poor return for 90 minutes work, a fellow came up to me and said I was wasting my time looking for agates here. We conversed awhile and he then sent his two grandsons to guide me to Pebble Jock's quarry.

The "quarry" was reallly a cave cut into the hillside where Jock dug out his pebbles for sale to jewelers: he also lived and slept in the cave. Apart from falling into the inevitable burn (creek) we got to the quarry Okay, and here I found my best pickings. The rock wasn't too hard and yielded fairly easily to the Estwing pick—I got an agate or two every few minutes. Working on the steep hillside was a bit precarious, and I slid down twice, first time on an earth slide, and the

next time on excavated rock—fortunately I hit a loose grass sod, though I got a little skinned hereafter.

If the agates we got assay up to the ones I've seen from this locality, then we will be well pleased, but we will not start cutting them until our saw arrives. The Path of Condie is a farming district, mostly dairy farming, and consists of two houses at the foot of the path (pass) itself and some scattered farms. The "village" itself is known as Pathstruie, and Mr. Dunn will tell any rockhounds the best places to hunt for agates.

I forgot to mention that the original "quarry" is now filled in, but the surrounding rock still has plenty of agates in it, but is hard work "howking" them out—I never before did so much manual labor in my life, but must confess that I enjoyed the unique experience.

Regarding the agates found along the coast, I didn't mention that jasper, red and brown, was so common that we didn't bother to pick any up. I did throw a piece into the car, (found at Arbroath) because it was streaked and had a plaid effect but I threw it away when we were cleaning the car at Elephant Rock. We fell down badly at Elephant Rock as we got only 3 agates, but a pal was up there later and hit a jackpot with about 115 agates. He sure was lucky! He gave me 35 and I'm waiting patiently for the new blade to arrive so they can be sawn. He will get a slice from each.

I heard about one agate 5 feet in diameter which was found last century in Burn Anne, Galston, Scotland. It was taken out of the bed of the stream by quarry workers and then cut and polished into a table top.

Editor's Note: Mr. Ramsay has sent R & M a ¾ inch diam., colorless, waterworn "Catesou" glass bead—a most interesting relic. Its label reads: "Catesou" Glass Bead. Washed ashore from one of the wrecks of the Dutch-Curacao West Indies Expedition in 1708.Bead given to us by Mrs. Sheena Watt, The Village, Usan, Angus, Scotland.

The agate localities mentioned in Mr. Ramsay's article are along the east coast of Scotland.

ROCKHUNTER'S ODE

With an Estwing in hand
And a bag on our backs
This small trudging band
Makes homeward tracks.

The day had been clear
From morning through night;
The workings quite near,
And its prospects bright.

Quick to the ledge
We had raced for a site
With chisels and a sledge
And eyes on a pegmatite.

Pounding with vigor,
Searching a rhomb
Or tetragonal figure
With a Bausch and Lomb

We worked like slaves
On our own rock pile
With occasional raves
When a hunter's wile

Had ferreted out
From a feldspar layer
A prism, rather stout,
Of a beryl, quite rare.

Then lunch by a tree;
Talk of our luck.
Glances of envy
At what others had struck.

Soon back to the sweat
Of a rockhounds fun:
A crystal to get
That weighs 'most a ton!'

Finally time to head back,
Each with his prize
And a loaded down pack
That caused many sighs.

Though grimy and tired,
Our hearts are now light;
Our spirits re-inspired
With a new-found apatite.

Davis M. Lapham

Meals Will Lose Out!

Editor R & M:

Enclosed $6.00 for two more years of ROCKS AND MINERALS. Would rather skip a few meals than miss one copy of R & M.

Helen M. McCaslin
Georgetown, Calif.

March 12, 1954

SEQUOIAS, DID YOU SAY? IN ALASKA?

By FRANK H. WASKEY
P.O. Box 163, Olney, Maryland

During the Summer of 1910, it was my good fortune to travel the Yukon River from White Horse in Yukon Territory to that River's mouth in Bering Sea. For more than a decade before that year of the memorable Iditarod Stampede, I had seen much of other sections of Northern Alaska, and thought I was informed on the salient geographical features of that part of Alaska in general.

In those days there was a sizable fleet of Mississippi River stern wheelers plying the Yukon. As we passed Pilot Station the travelled channels followed closely the northerly limit of the Yukon Delta. It was a beautiful late summer morning. The Hurrican Deck was crowded with St. Michael and Nome and "Outside" bound passengers.

As we rounded a bend, all eyes were attracted to a Mountain rising majestically from the tundra to the southwest.

"Hello! What is that Mountain out there in the flats? And what do you call it?"

"Why, that is Kusilvak?"

"Is there any one living out there?"

"Yes, Eskimos, lots of 'em."

"Any prospectors been out there?"

"Never heard of any. But there is mineral out there"

"How do you know?" "Well in one of the Villages there is a man who had an ice chisel of copper. And there is a story of a family who used to have plates made of copper. And right today, some of the women wear bracelets of copper."

So, that was that, and that fall a small gas boat was chartered in Nome, and with a companion and an outfit of sorts, including two dog teams, we pulled out for Scammom Bay, which the charts indicated was the best point to reach Kusilvak via Tundra Sloughs and later over the frozen tundras.

A deck load of lumber, on top of that two basket sleds, a 22 foot Peterboro, and fifteen sled dogs put the final "fools rush in" touch to the venture. In the heavy seas that were encountered before we made shelter we learnd how the live weight of fifteen large dogs, so far above the little crafts center of gravity could make for danger. Thanks to a kindly Providence and the seamanship of Cap Evans of Gloucester forebears we made it.

We did not find the copper of Kusilvak. But in the next several years we did find what a land of lure and lethe was and is that broad stretch of tundra and lakes that lies between the mouths of the Yukon and Kuskokwim Rivers. Long ago, before the sediment laden waters of these two great Streams had extended their seashore lines around a great alluvial fan, there were many ocean girt islands within the space now often spoken of as THE TUNDRA.

This great triangle extends from the 160th Meridian to past the 166th, and from below the 60th Parallel to above the 63rd. The elevations that have been encompassed by this onward marching fan are mostly low lying, some mayhap of recent upwarping or emergence as lava flows.

But, besides Kusilvak, there are two other elevations which well rank as mountains. Southwesterly, some 30 to 60 miles from Kusilvak, are the Askinuks whose westerly point is the storm swept Cape Romanzoff. Ninety miles southeasterly as the homing Emperor Geese fly from their fall feeding grounds feninst the south slope of the Askinuks lies Cape Vancouver of the intricately folded sedimentaries. Hard by, on a clean swept beach of platy pebbles of sandstone and calcareous rocks, are many broad leaved and lacy imprints of Tertiary flora.

The Nelson Island Mountains which stretch eastward for 30 miles from Cape Vancouver are one of several localities where the Western Eskimo secure their sharpening stones. In the more than forty years that the writer has been buying Artifacts from the Eskimo these stones have been a particulary desirable item.

Not only from an archeological standpoint but from the fact that they were and are saleable to other Eskimos.

For the Eskimo, user of crooked knife of home manufacture or Skinning knife of factory make, prefers a "thlin" from the Kuskokwim or a "nukaveek" from Lake Nerka to a white man's sawed piece of carborundum or novaculite.

So, what. A prospector must have a means of securing his next grubstake, and we have scriptural warrant that "the laborer is worthy of his hire". So many a sharpening stone that might have been donated or sold to some far away Museum went instead for six bits or a simoleon to some close at hand native artisan.

In 1947 in the trapping village of A-kum-agow-uk, a few miles south of the river Kol-e-vin-e-rak, the southerly outlet of Baird Inlet, a man offered for sale a "thlin" that made my travel tired old heart skip a beat! Just a close grained gray stone with a suggestion of muddy green, nearly a parallelogram of two by a little more than six inches. Untouched by saw or hammer, just as the forces of erosion had shaped it inconformity with its joint and cleavage planes. Its thickness about one inch with one of its edges polished a mottled brown, by years of use as a whet stone.

But listen, you collectors, here is what made my faithful pump go pit a pat! On the upper side of the stone were a half dozen impressions in positive splendid relief of fronds from some coniferous tree. It was some weeks before I was at home and could consult the Plates in my Hollicks "Tertiary Flora of Alaska". And then, tyro that I was and am, I could only hope that it was a Sequoia with a second choice of Iaxodium.

Immediately after the purchase of the thlin, I had asked the seller where it came from. He did not know. The fossil fertile beaches of Nelson Island were some 30 to 50 miles away. I had never seen an imprint there to compare with the ones just secured.

Some 8 or 10 miles from Akumagowuk are two low lying hills, Ingariak and Ingariyagak. My further inquiries as to whether the stone might have come from these neighboring hills met with the usual non-commital "Na-me-ke-ka".

Artifacts among the Eskimo are often bartered far and wide, as witness the tools of Kobuk Jade, found in middens hundreds of miles away from the Kobuk. To make sure that this thlin had not come from some distant source, it seemed worth while to either find a similar imprint nearby, or similar rock in situ.

Fossil Sequoia leaf imprints found in Alaska.

In 1950, one beach pebble with an imprint similar to these on the thlin was secured on Nelson Island. This was sent to Dr. Ralph W. Chaney, eminent paleobotanist of the University of California, at Berkeley. Doctor Chaney tentatively expressed the opinion that it might be a Sequoia. The sharpening stone was then sent to him, and on sight he was so impressed with its scientific value, that he studied it with great care, comparing it with other Sequoia imprints in the National Museum at Washington, and elsewhere.

By letter he said it seemed to be identical with S. sempervirens! The present Coast Redwood of California and Oregon. And suggested that further effort be made to ascertain the original source of the sharpening stone. In August, 1952, a small float plane was chartered and flown to the vicinity of the two small hills near Akumagowak. As a result of the continued heavy rains of that summer, the lakes, streams and ponds surrounding these hills were so high that difficulty was found in locating a landing from which one could walk in safety to the hills skirts. Circling low over one of these hills it was evident to the eye that the outcrops and mantling boulders were of a recent vesicular lava, and so unlikely to be fossil bearing.

But we wanted to be sure, and at the second landing we were able to pick a devious way to the hill without going over our hip boots. Sure enough the formation was the same barren Cenozoic lava that often occurs from St. Michael to Cape Avinof.

As we started to return to the "Cub" the abundance of Cloud, Lingon and Heath berries on the swells and creeps of the tundra near the foot of the hill did their bit to lessen our disappointment.

After flying low over other low lying hills and seeing the same knobby boulders of erosion we high tailed it for Nelson Island.

At our very first landing at a village on the Tooksook River which skirts the cliffs on the south side of the Nelson Island Mts. we secured by purchase one tiny rock with an imprint indubitably a Sequoia. That was indeed encouraging. But the ten days spent subsequently with several natives helping in our search, yielded only four more Sequoias. All in rock of the same character as the thlin, and all (including the thlin) with the same tiny holes transecting the one time mud from which the rock was formed.

Query? Do these tiny holes, one millimeter or so in diameter, indicate the course of rootlets, or were they made by marine or lacustrine borers? Organic matter of some kind is suggested by oxidation of the rock surrounding the tiny holes.

Where one of these holes is coincident with one of the joint fracture the oxidation extends more deeply into the rock.

Rock of this character, either with or without fossils, was not found in situ. It is the opinion of the writer that this rock underlies the softer and coarser rocks that are so fertile of Balix Populus, Alnus, Larus and other broad leaf imprints.

These younger (?) rocks also produce Glyptostrobus and other unidentified lacy imprints.

Although only five of the Sequoias were found as float on Nelson Island, yet the circumstances under which these five specimens occurred indicates that they were picked up not far from their parent strata. And to this rainbow chaser that is presumptive evidence that the original thlin, a photo of which accompanies this labor of love, originally came from Nelson Island. And that the fronds, which by some subtle chemistry left their beautiful impress on Mr. Eskimo's sharpening stone were in the long ago, a part of a living tree growing not far from that point on God's green earth which we may now designate as Longitude 165 North, Latitude 60 - 30 West.

It is not likely that the borrowed Time and scant funds under which this Commercial collector works will permit another visit to fascinating if stormy and far away Nelson Island.

But perhaps Dr. Chaney or some of his colleagues may follow in the footsteps of that other man of Science, Dr. E. W.

Nelson, in whose worthy honor the Island was named.

Incidentally, Ingariak and Ingariyagak are in the immediate vicinity of Dall lake, the second largest (as regards surface area) lake in Alaska. Professor Dall, whose name also identifies Ovis dalli and Dallia pectoralis, began his studies of travels in Alaska in 1867, shortly after our flag was raised at Sitka.

Doctor Nelson, (with St. Michael as base) from 1877 to 1881, by dog team and k a y a k circumnavigated THE TUNDRA, and as well knew Norton Sound and beyond.

His splendidly written and illustrated "The Eskimo about Bering Strait" now available only in large Libraries is a veritable gold mine for present day students of ancient Eskimo customs and lore. But that, as has been said, is "another story."

Editor's Note:—Mr. Waskey for many years lived in Alaska but at present he is residing in Olney, Md.

NOVICE COLUMN

In the Sept-Oct 1953 R&M Gordon ViGario, 2231 Pine St., Bakersfield, Calif. suggested that a Novice Column be opened for rank beginners in mineral collecting. These amateurs, who do not know one mineral from another, may submit their names to the Novice Column.

It is our hope that collectors having duplicates may donate a few specimens to one or more novices who are expected to acknowledge receipt of specimens received and to reimburse each sender for postage paid on the packages. Please print or write plainly the names and localities of all specimens sent novices, and if 2 or more minerals appear on the same specimen, identify each. Remember the novices do not know one mineral from another, so please be as helpful as you can.

The following is the third list of novice collectors:

Bert Klaiman, 2515 Olinville Ave., Bronx 67, N. Y.

Naidene Goy, 211 N. Phillippa, Hinsdale, Ill.

Gary Knowles, 3906 Canal, Grandville, Mich. (14 yrs.)

Gale S. Patterson, Box 74, Cadillac, Mich.

Miss Caroline Hodges, 7 Sycamore St., Bronxville, N. Y.

Raymond W. Grant, 1513 Elm St., Bethlehem, Pa.

Jim DeFigh, Box 216, Monitor, Wash. (13 yrs.)

Wayne R. Comiskey, 7403 Park Ave., North Bergen, N. J. (10 yrs.)

Mrs. Harry F. Gale, Jr., 5608 S. Emerson, Minneapolis 19, Minn.

Mr. & Mrs. Walter C. Kramer, 1106 Wisconsin Ave., Oak Park, Ill.

James N. Jobst, 501 Michigan Ave., Leavenworth, Kans.

Harold Noreen, Box 332, Harwick, Mass.

Mrs. R. W. Nutting, 35 Forrest Drive, Pekin, Ill.

Bob Kieronski, 3429 Bleigh Ave., Philadelphia 36, Pa. (12 yrs.)

Miss Caroline Askew, Box 614, Union Post Office, Endicott, N. Y.

David Flynn, 5 Met. Oval, Bronx 62, N. Y.

David Winn, 1914 S. College, Tulsa 4, Okla. (9 yrs.)

Harold S. Johansen, 360 South 11 St., Poplar Bluff, Mo.

John Jansen, 2010 Marwood Drive, Salt Lake City, Utah.

AC/2S. C. Seybold, A. F. 18386533, 405th Bomb. SQD. A.P.O. 17 c/o P.M. New York, N. Y.

Miss La Vida Lynch, 200 Seneca Trail, Louisville, Ky.

Mrs. Frank Van Etten, Box 183, Lewistown, Ill.

World News on Mineral Occurrences

Items on new finds are desired. Please send them in.

Abbreviations: xl—crystal xled—crystallized xline—crystalline

ALABAMA — A note from William M. Johnson, RFD 6, Knoxville, Tenn., informs us that fluorite is found with barite east of Birmingham, Jefferson Co., Ala., near a branch of the Cahaba River.

ARIZONA—A nice xl of green fluorite from the Eagle Tail Mts., Yuma Co., Ariz., was sent in by Earl Mayer, 1753—1st St., Yuma, Ariz.

"In the near future we will send you some specimens from all over Yuma Co. including sand.

"We will also be glad to help any readers of R & M if they should happen to be down this way: on where to go and what they can collect. We have decided you have the finest magazine published for Rockhounds."—paragraph from Mr. Mayer's letter, dated Sept. 25, 1953.

ARKANSAS—Celestite has been found in White, Pike Co., Ark.

CALIFORNIA—A nice gray specimen of petrified wood, from Calistoga, Napa Co., Calif., has been donated by Peter Mohlsick (the Editor's cousin), 316-19th St., Sacramento, Calif.

COLORADO—A letter, dated Dec. 20, 1953, comes from Robert M. Rich, 1627 Pratt Blvd., Chicago 26, Ill.

"At Cripple Creek (Teller Co.), Colo., this past summer some friends of mine found some interesting specimens which turned out to be selenite xls and tiny calcite, quartz, and fluorite xls. These crystals are micro mounts and are quite interesting. They came from the King Mine near Cripple Creek."

CONNECTICUT—A very nice specimen consisting of a 1 inch vein of gray scheelite in black biotite schist and coming from the Worth feldspar quarry on Bog Hill, East Hampton, Middlesex Co., Conn., has been sent in by Richard Schooner, Box 215, East Hampton, Conn. A letter, dated Dec. 26, 1953, reporting on the scheelite, was also received from Mr. Schooner.

"The unseasonably warm weather of a few days ago made it possible for me to get in still another 1953 field trip. In this case, I did not have to travel very far. In fact, no more than two or three miles were covered in each direction. The Worth Spar Company, of Cobalt, has been working a group of adjacent quarries at the Hurd Park end of Hog Hill. I used to visit the place, from time to time, but, since very little of interest ever turned up, I ignored the locality for an entire year; something which no collector should ever do, as you know. Well, I was immediately rewarded with several good examples of autunite, which is fairly common in the pegmatite. I had not seen it there, before. Finally, I got around to looking over the marginal material on the flat dumps. It was mostly biotite schist, studded with well-formed almandite garnet crystals. I saw a few veins, as much as four or five inches in thickness, which were composed of plagioclase, quartz, and a glassy cleavable mineral. A cavity of crystallized pyrite was present in one such vein, so I had occasion to break the mass of schist and associated material. Lifting an almost solid fragment of the mysterious white mineral, I was amazed at its weight. Then, I realized that what I had been hammering away on was exceptionally rich scheelite! Needless to say, although I am saying it, I filled my sack with fine specimens,

anxious to get home and see how brightly they would fluoresce under the short wave Mineralight. After carrying that load of scheelite over a steep hill, and on a road which was paved with boulders, I could readily attest to the fact that the specific gravity of about 6.00, as given in various reference books, is highly conservative. It seemed like 60.00, by the time I got inside the house! However, the intensity of the reaction, when the scheelite was exposed to the ultra-violet light, compensated for the discomfort of the hike. You can see what I mean, because I am enc'osing a rather rich piece of the mineral. I have a couple of solid masses in my collection, and it is doubtful that any better material ever came out of the tungsten mine in Trumbull. Since this is a very interesting discovery, I thought that you would like to hear about it. Honestly, there is no way of knowing what will come to light next in this remarkable region where I have the good fortune to live! Unfortunately, few, of the hundred and fifty minerals are present in commercially valuable quantity."

DELAWARE—White granular quartz has been quarried 2½ miles north of Newark, New Castle Co., Del., and ground at Tweed's mill, near Newark.

FLORIDA—Brownish jaspery quartz pebbles, found at Panama City, Bay Co., Fla., have been donated by W. T. O'Gara, 1937 Hurley Ave., Fort Worth 4, Texas.

GEORGIA — Dark blue masses of covellite, with chalcopyrite and chalcocite, were found in the old copper mine at Canton, Cherokee Co., Ga.

IDAHO — Azurite has been mined with lead ore in the Wood River district, Blaine Co., Idaho.

ILLINOIS—The following note, dated Jan. 18, 1954, comes from H. E. Chelf, 219 Hendryx Lane, Peoria, Ill.

"I would like to report my find of a datolite nodule about the size of a standard soft ball weighing 1½ lbs. It is red and green mottled. A geologist friend of mine says it is of high quality. Picked it up about 10 miles north of Peoria, (Peoria Co.), Ill., on the Illinois River."

INDIANA — A letter dated June 28, 1953, comes from Walter Reeves, R3, Greencastle, Ind.

"Herewith a few pebbles taken from a gravel bar in Big Walnut Creek on my farm near Greencastle, Putnam Co., Ind. Fill the jar with clear water to bring out the colors."

A 2 x 3 jar was received filled to the brim with various pebbles. There were brown and red jaspers, milky quartz, red microcline, brown limonite, reddish granites, gray granites. When the jar was filled with water, the different colors made an attractive display.

IOWA — The following letter, dated Oct. 23, 1953, comes from Mrs. Ashley Ferrier, R4, Mason City, Iowa.

"A location called the Clay Banks, about 10 miles east and south of Mason City (Cerro Gordo Co.), 4 miles east of Portland, Iowa, along the Winnabago River, yields some very fine fossils for the digging. They are quite famous."

KANSAS—Halite (rock salt) has been mined for many years at Ellsworth, Ellsworth Co., Kans.

KENTUCKY—A lustrous lead-gray galena mass in grayish-white barite and coming from the Lockport mine, 2 miles north of Lockport, Henry Co., Ky., was donated recently by Bob Barnes, 3930 Brookfield Ave., Louisville 7, Ky.

LOUISIANA—A specimen of a fine grained gray sandstone (2 faces sawed) was donated recently by Louis F. Rodrigue, Raceland, La.

"I could never let good old Louisiana down, so under separate cover find a sample of the finest sandstone from this state. It is used in a large ceramic industry.

"The sample was collected at Rosefield in Catahoula Parish (called Catahoula Sandstone) by Donald D. Cam-

eron."—in letter from Mr. Rodrigue dated June 15, 1953.

MAINE—A specimen of wolframite—black, platy, lustrous masses in grayish granite—has been donated to R & M by William P. Hinckley, RFD 3, South Brewer, Maine. The locality for the wolframite is Blue Hill Falls, Hancock Co., Maine. A letter, dated Jan. 26, 1954, has also been received from Mr. Hinckley.

"I am sending you a mineral which may give you an item for your department, World News on Mineral Occurrences. The mineral is a wolframite. It is not really a new find, since it was reported from this locality by Dr. Charles Jackson, M. D., in his FIRST ANNUAL REPORT OF THE GEOLOGY OF MAINE published in 1836. However none of my narrow circle of rock hunting friends had ever seen any from this state before. Since the old report failed to give any detailed directions, it was not easy to find, and we hope to find a more plentiful source by continued hunting. It came from Blue Hill, that part of the town known as Blue Hill Falls. It appears to be associated with arsenopyrite and molybdenite in granite, but near the contact of the granite intrusion into the schist which makes up the country rock of the area. Under ultra-violet light some scheelite can be seen."

No arsenopyrite nor scheelite was seen in the specimen received but tiny gray flakes of molybdenite were present in the granite.

MARYLAND — In the July-August 1953 R & M, French Morgan reported the finding of hyalite opal at the rockbridgeite locality 2 miles east of Beltsville, Prince Georges Co., Md. "This appears to be the first time this mineral has been reported from this state," said Mr. Morgan.

A correction has been sent in by Harold Levey, 5023 Pimlico Rd., Baltimore 15, Md.

"I am sending you this correction of Mr. French Morgan's note in the July-August 1953 issue of R & M under World News on Mineral Occurrences. Mr. Morgan reports the finding of hyalite opal near Beltsville and states that this appears to be the first find reported from Maryland. While it is the first find in Prince Georges Co.; it is not the first for the state. Hyalite has previously been found at the Bare Hills serpentine barren and at an old chrome pit in the Soldiers Delight serpentine barren. In both cases, the hyalite was found in cracks in deweylite. While the Bare Hills occurrence has been known for some time, the find at Soldiers Delight has been recent. The old chrome pit is a few hundred yards off of the Dolfield Rd. and not too far from the old chrome sand workings. Very large veins of deweylite occur on the left side of the mine entrance and quite large pieces may be collected."

The two localities referred to by Mr. Levey are in Baltimore County. Maryland is famous for its many mineral localities and it is quite a problem to keep an accurate account of the minerals that have been found and are being found in the State. For example, "Minerals of Maryland" a 92-page publication which came out in 1940, never listed hyalite in the index. (hyalite is listed, however, on p. 29 under "Bare Hills Chrome Mine and Vicinity").

MASSACHUSETTS—Forsterite (Boltonite) as grayish masses imbedded in white limestone occur at the old limestone quarry at Bolton, Worcester Co., Mass.

MICHIGAN—An interesting specimen consisting of greenish-brown radiated masses of grunerite in black fine granular magnetite, was donated recently by Mr. and Mrs. Floyd N. Mortenson, 69 West End, Pontiac, Mich. The locality for the grunerite is the Michigamme iron mine at Michigamme, Marquette Co., Mich.

MINNESOTA — A letter, dated Oct. 30, 1953, comes from Fred McAtee, 418 N. W. 3rd Ave., Faribault, Minn.

"I wonder if you have had a write-up on the discovery of thunder eggs on Lake

Superior, beyond Grand Marias (Cook Co.), Minn. Agates have also been found in rocks on a hill about 14 miles N.E. of Grand Marias. The agates are often nicely banded and vary from tiny up to 3 inches in diam.

"The thunder eggs are found in a clay bank about 300 feet from a lake—they occur in all sizes from ½ to 4 inches in diameter."

MISSISSIPPI—Last summer Mr. & Mrs. Julian Wetherbee, 22 Wheelock St., Keene, N. H., made a long trip which took them through many states of the Union. While passing through Mississippi, Mrs. Wetherbee collected some nice little brown jaspers, east of Newton, Newton Co., Miss.

MISSOURI—A recent letter from G. Royal, 9515 Cresskill Place, Jamaica 35, N. Y., tells us:

"In case you don't happen to know, there are lots of geodes in the Monroe City area of Monroe County, Mo., found along the various creeks. I have a nice specimen about 7½ inches in diameter. Also one broken in half showing very nice quartz crystals."

MONTANA — Loose grayish xls of corundum, 2 inches in length and longer, were found at the Montana Corundum Co. mine, 10 miles S. W. of Gallatin Gateway, Gallatin Co., Mont.

NEBRASKA—Small xls of celestite have been found in geodal cavities in limestone near Holmesville, Gage Co., Nebr.

NEVADA—Fine smoky gray translucent masses of thenardite have been found in Rhodes Marsh, Esmeralda Co., Nev.

NEW HAMPSHIRE—Greenish scales of autunite on massive smoky quartz have been found in Alexandria, Grafton Co., N. H.

NEW JERSEY — Black plates of biotite, 2 x 2½ inches in size, found near Oakland, Bergen Co., N. J. (6 miles from the New York line), have been sent us by Jeff Marshall, 114 Claremont Place, Cranford, N. J.

In July-August, 1949, R & M (p. 338) appeared an item "Rock from New York tunnel dumped in Jersey City." Another item relative to this dump has been received from Rev. William J. Frazer of Moosic, Penn. The item is dated Dec. 2, 1953, and reads:

"In regard item in July-August, 1949 R & M, concerning rock from Brooklyn-Battery Tunnel, New York City, dumped in Jersey City, N. J., this is to advise that "progress" has now overtaken this Dump. Most of the rocks with minerals have been bulldozed and levelled off so collecting is no more at this locality. Sorry!"

NEW MEXICO — Twin crystals of arsenopyrite disseminated through clay in a fault zone in quartz porphyry, have been found in the Tres Hermanas district, Luna Co., N. Mex.

NEW YORK—Mrs. George Ellrott, New Baltimore, N. Y., has sent us a one full page sheet taken from the Centennial issue of Coxsackie Union-News, April 1952, Coxsackie, N. Y. This sheet featured 4 long columns titled "The Algonquins mined flint at Coxsackie for five thousand years."

Coxsackie (Greene Co., N. Y.), is on the west bank of the Hudson River. According to the item, so many arrowheads had been found around the Coxsackie area, that it was believed flint had not only been manufactured into arrowheads, but had actually been mined in the vicinity. Finally the site was located in the Spring of 1921 by State archeologist, Arthur C. Parker. In his own words, Parker found "the most remarkable archeological monument in the State of New York. It was literally a mountain of arrowheads."

The mountain (Flint Mine Hill) is a ridge about 900 feet wide and over a mile in length, located 28 degrees east of north and covered with shallow soil. Parker found many depressions filled

with broken shale and flint in various and numerous sections of the rise. The thick woods which crowned the hill were pitted with these depressions, and within them was found the first great pit, fully 40 feet deep, and believed to be the principal quarry. It was filled with masses of flint and hammerstones. West of the quarry was a huge dumping ground. West and north of the quarry were even more enormous dumps of broken quarry material.

On the east side of the hill a pit 30 feet in diameter was found, surrounded by 300 or more smaller pits, which reached down into the layers of flint rock.

The discovery of the flint mines at Coxsackie proved indisputably that many tribes from remote sections in the west and middle west travelled great distances to take advantage of the "manufacturing plant" at Flint Mine Hill.

NORTH CAROLINA—John H. Summey, 712 Carolina Ave., Gastonia, N. C., sent us a copy of the Dec. 16, 1953 issue of THE STATE PORT PILOT, Southport, N. C.

According to the newspaper, which covers Brunswick County, a huge mastodon tooth was found by John D. O'Daniel who is employed on one of the work boats at Sunny Point. The tooth had been dug up from a depth of 50 feet.

This is the most interesting discovery of this type thus far in connection with the Sunny Point dredging and excavations, and it gives rise to the question of what additional fossils may turn up.

NORTH DAKOTA—A sawed slab of good gem quality petrified wood (grayish-blue banded chalcedony) has been received from S. T. Parke, Sterling, N. D.

"Am sending you by parcel post one small piece of petrified wood. I found only a small piece of it, but am dividing it with you. This was found on Cedar River north of Hettinger in Adams County, N. D."—paragraph in a recent letter from Mr. Parke.

OHIO — The following letter, dated Dec. 21, 1953, comes from C. O. Gettings, 2001 Starr Ave., Toledo 3, Ohio.

"Enclosed is a photograph which may

Huge pocket in limestone quarry at Woodville, Ohio. Duane Gettings sits in opening just to give you an idea of its size.

interest you. It shows two of the largest pockets ever seen in the limestone quarry at Woodville, (Sandusky Co.), Ohio. These were bared by the blast of August 17th. While the blast ruined most of the crystals, a large number of well terminated crystals were found of celestite with imbedded aragonite. My prize was a 9½ inch crystal and a crystal fragment weighing over ten pounds. Tons of fragments were strewn about the opening and made climbing quite difficult. But who ever saw a collector who would not risk a broken neck for a good crystal! My son, Duane, is sitting in the opening to give you an idea of the size. The specimens react well under the long wave light. The aragonite fluoresces a bright blue and phosphoresces a very light blue."

OKLAHOMA—At Marble City, Sequoyah Co., Okla., pure white to pink marble has been quarried. The Pioneer Telephone Building at Oklahoma City was constructed of this marble.

OREGON—Gold-bearing, bronzy pyrrhotite occurs in the Virtue district, Baker Co., Ore.

PENNSYLVANIA — About 3 or 4 years ago when a new cut was made in the turnpike which went through the Morgantown quarry in Morgantown (near Monocacy in Berks Co.), Penn., some light pinkish xled dolomites were collected by Thomas Mooney, Box 373, Morristown, N. J. One of these fine specimens, a beautiful group of pinkish dolomite xls on coarse xline white dolomite, was donated recently to R & M by Mr. Mooney.

RHODE ISLAND—A beautiful specimen of fibrous quartz, grayish, platy, has been donated to R & M by Prof. Alonzo Quinn, Brown University, Providence, R. I.

The locality for this interesting specimen is the Cranston graphite mine, at Cranston, Providence Co., R. I.

SOUTH CAROLINA—Small nuggets of gold have been found about 5 miles south of Seneca, Oconee Co., S. C.

SOUTH DAKOTA—John P. Connor, Box 522, Armour, S. D., sent in not long ago a small specimen that he had found near Armour. It consisted of dark red crude xls of almandite garnet in gray granite.

TENNESSEE — Apjohnite, as fine transparent needles with a silky luster, occurs in the Alum Cave in Sevier Co., Tenn. Alum Cave is situated at the headwaters of the Little Pigeon, a tributary of the Tennessee River.

TEXAS — A grayish-blue chalcedony stalactite has been received from Miss M. I. Rink, 608 Ash Ave., McAllen, Texas. Her letter, dated Jan. 14, 1954, carries this paragraph:

"This chalcedony was found standing erect in powdery sandy clay on hills along with numerous similar pieces, all erect but each piece seems to have the same diameter throughout. It is difficult to ascertain the length of them because they break rather readily while one is digging for them. Did get one 18 inches in length before it broke off. All stand upright. Found near Rio Grande City, Starr Co., Texas."

UTAH — Some attractive slabs of banded dark red, white, gray, brown opal have been received from Oliver A. Mason, 319-26th St., Ogden, Utah.

"I am sending you some slabs of Utah opal agate (bacon agate) from north of Milford, Utah, in Beaver County." —letter dated Jan. 19, 1954, from Mr. Mason.

VERMONT—Fuchsite, a greenish mica, occurs in mica schist, about 3 miles southeast of Rutland (Rutland Co., Vt.), on Round Mountain. The deposit is said to be several feet thick.

VIRGINIA—Several months ago we had the good fortune to run into Carl R. Schroeder, 27 Glenwood Drive, Short Hills, N. J., at the Paterson Convention. Mr. Schroeder gave us a most interesting specimen which unfortunately got mislaid before we had a chance to examine it. It

has now been found and it consists of small reddish-brown rutile xls and masses of blue quartz in white feldspar The locality is the famous rutile mine located at Roseland, Nelson Co., Va. We were shocked to learn from Mr. Schroeder that this mine, which had been in operation for many years by the American Rutile Company, was abandoned two years ago and the property sold. We visited the mine in 1937 but never had a chance to write it up for R & M.

WASHINGTON — Small masses of lead-gray molybdenite in smoky quartz have been sent in by Walter W. West, Loomis, Wash. His letter, dated Oct. 1, 1953, tells us that the locality for the molybdenite is Horseshoe Basin on Mt. Chopacka at Palmer Lake, Loomis, (Okanogan Co.), Wash.

WEST VIRGINIA—A nice 1 inch pebble of smoky quartz (one face sawed); also a 3-sided polished slab of smoky quartz and both coming from Parkersburg, Wood Co., W. Va., have been donated by Thomas W. James, 923-32nd St., Parkersburg, W. Va.

WISCONSIN — Kaolin (china clay) has been dug at Rice Lake, Barron Co., Wisc.

WYOMING — Chromite, the black massive ore of chromium, has been mined at Deer Creek Canyon, 15 miles southwest of Glenrock, Converse Co., Wyo.

AUSTRIA—Werner Lieber, Hubschstr. 24, Karlsruhe, U. S. Zone, Germany, has sent in an 1½ inch rock crystal that is coated with minute flakes of gray chlorite. Mr. Lieber collected this specimen last August in Rauris, Salzburg, Austria.

CANADA—A pale pink xline rhodochrosite associated with dark brown cleavable sphalerite has been donated by Dr. and Mrs. Leslie Bacon, 1856-23 St., Wyandotte, Mich. This fine specimen comes from the famous Silver Islet silver mine in Lake Superior (Thunder Bay district, Ontario, Canada). A most interesting article on this noted locality, illustrated with map and photo and written by Mrs. Bacon, appeared in the Sept.-Oct. 1953 R & M, (pp. 456-459).

GERMANY—A bluish stalactitic mass of chalcanthite and coming from the Rammelsberg copper mine near Goslar in the Harz, Germany, has been donated by Werner Lieber, Hubschstr. 24, Karlsruhe, U. S. Zone, Germany. Mr. Lieber would be interested in exchanging minerals with U. S. collectors.

SCOTLAND—A deep red ½ inch jasper cabochon has been donated by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4, Scotland. It comes from Torphin quarry, Pentland Hills, Scotland, and was cut and polished by Sandy's friend, Archie Forrest, of Glasgow. It is a very nice gem.

SOUTH AFRICA—A handsome specimen of bluish platy kyanite coated with greenish scales of fuchsite has been donated by John Lavranos, P. O. 10257, Johannesburg, South Africa. The locality for the specimen is Gravelotte, Eastern Transvaal, South Africa.

SPAIN—"In Ponferrada, Leon Province, Spain, this past week, I found some very nice scheelite xls in the scheelite mines. Also found a large scheelite xl, 3 x 3 x 3½ inches in size that weighs about 3 lbs."—letter dated Dec. 21, 1953, from Juan Montal, Plaza Sagrado Corazon 1, Villafranca del Panades, Spain.

R(equiescat) I(n) P(ace)

I wish that some way could be found
To kill that horrid word, "rockhound":
To me it's senseless, dumb and cheap,
A term that we ought not to keep.
I'm sure there would be no objector
If we'd say "mineral collector".

—Marian Brown Casperson

COLLECTING IN NIAGARA GORGE, N. Y.

By PETER ZODAC

Editor, Rocks and Minerals

The world famous Niagara Falls and the Niagara Gorge are wholly post-glacial in origin. After plunging 167 feet at the falls, the Niagara River rushes northward for 7 miles through the gorge whose depth is between 200 and 300 feet and whose width averages about 500 feet. The walls of the gorge are gray limestone; the gorge separates Canada (west) and United States (east).

About 4 miles north of the falls is Devil's Hole State Park. This is a deep and beautiful chasm of historic interest; it was acquired by the State of New York a few years ago. It was at Devil's Hole that 350 British soldiers were massacred in 1763. The soldiers were attacked by the Indians and those not killed by rifle fire were driven alive over the precipice. Only three of the 350 survived to tell the tale. From Devil's Hole there are magnificent views of the gorge.

Devil's Hole is in the Niagara gorge and a path leads down into it and to the river itself. A tablet on a limestone boulder, 50 feet above the river and near the path, bears this inscription:

> At the top of the cliff above this spot Sept. 14, 1763, occurred
> "The Devil's Hole Massacre"
> when 500 Seneca Indians ambushed a British supply train, massacred its escort and hurled bodies and wagons into the chasm below, only 3, John Stedman, William Matthews, and one other escaping.
> Erected by Niagara Gorge Railroad Co. and presented to Niagara Frontier Landmarks Association
> 1902

On Sun. Aug. 25, 1946, I paid a visit to Devil's Hole but due to illness did not stay too long. My cousin, John Bourne and his little daughter, Patsy, who at that time were living in Niagara Falls, were my guides. The banks of the river being quite near, I wandered down to it and found it was full of loose dark gray limestone blocks, which on breaking open showed much calcite and some sphalerite. These are described as follows:

Calcite. Quite common in the limestone. It was found as small white rhombohedral crystals; white crystalline masses; and as creamy white crusts.

Sphalerite. Found as small golden-brown masses with crystalline white calcite in crevices of dark gray limestone. Some of the limestone was so compact and dark gray that it looked like sandstone.

As mentioned before, due to illness I did not stay long otherwise I might have found some of the other minerals reported from the gorge such as celestite, chalcopyrite, dolomite, fluorite, gypsum, etc. And neither did I attempt to explore the cave that is in the Hole (we had no flashlight, for one thing). There is a large amount of loose limestone blocks in the river and it is an ideal spot for collecting, as few people wander down to the river (we were the only ones there at the time of our visit).

About a month later, Fri. Sept. 20, 1946, a huge slice of the brink of Niagara Falls (American side) collapsed, shaking the city of Niagara Falls with earthquake intensity as it tumbled down the 167 foot face of the cataract. The slice was estimated 120 feet in length at the top and 30 at the bottom and it tumbled into the gorge shortly after 11:00 a.m., with a terrific roar.

There are two cities on the opposite sides of the falls. Niagara Falls, N. Y. (east) and Niagara Falls, Ontario, Canada (west).

THE FLUORITE DEPOSITS OF WESTMORELAND, N. H.

By MRS. JULIAN WETHERBEE

22 Wheelock Street, Keene, N. H.

Fluorite is a mineral of considerable commercial importance because of its wide use in the chemical, ceramic, and metallurgic industries.

It is essential in making hydrofluoric acid, and in glass and enamel industries, also used in making steel.

The only deposits that have produced fluorite in New Hampshire are located in the towns of Westmoreland and Chesterfield, in Cheshire County.

These deposits have been known for a number of years. Brief descriptions of them have appeared from time to time. (Jackson wrote about them in "Geology and Mineralogy of New Hampshire") also Hitchcock and Bannerman. They have been mined intermittently during the past thirty-odd years, the last year of mining was 1938. The largest tonage removed was in the years of 1917 and 1918 when production exceeded 1000 tons each year.

The deposits of Westmoreland occur as small tabular veins in a body of gneissic rock which underlies a portion of this territory. The gneiss is granitic in composition and is overlain on the southwest, south, and north by a flatly dipping group of hornblende schists (originally volcanic tuffs, and breccias), quartzite, and staurolite-mica schist.

Several veins bearing fluorite have been discovered in the gneiss and seven have produced fluorite at one time or another. The Pierce mine is located at the contact of the gneiss and the overlying hornblende schist.

These gneiss veins contain large amounts of quartz, and show a pronounced comb structure, many of the cavities contain crystals of clear quartz. Other minerals present are fluorite, barite, calcite, kaolin, sericite, and streaks of sulphides such as chalcoyprite, pyrite, galena, sphalerite, and bornite. Limonite, smithsonite, and radiating clusters of malachite, derived as alteration products of the sulphides, are also present in minor quantities.

The fluorite is mostly of a good green color, although deep purple, a white, and even blue have been found.

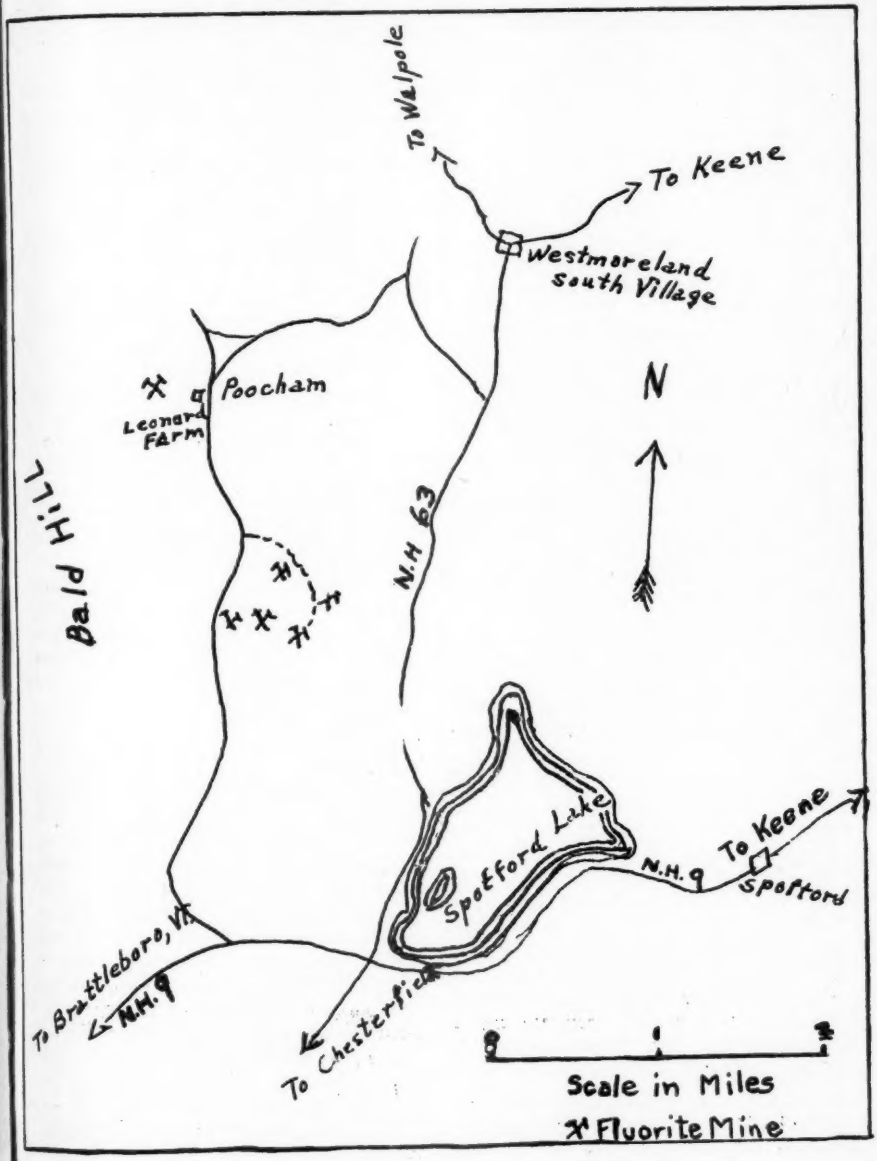
Most of the mines are open cut type, although the Will Wise mine has a shaft that is usually partly filled with water, this is located on the northeast slope of Bald Hill. It is in the dump here that the writer found a nice blue specimen of fluorite. The quartz crystals are sometimes one crystal growing on top of another. A few loose ones found resemble a bottle stopper.

The old road from the so called Leonard farm is so overgrown it is hard to find the mine on the hill unless one is familiar with the place. These Westmoreland mines are a yearly trip for the Keene Mineral Club and year after year we show collectors the way to this mine. We have had collectors from as far away as Michigan come here to visit the Westmoreland mines.

(Some of the information for the above article was obtained from New Hampshire Mineral Resource Survey. Part V. The Fluorite Deposits of Cheshire Co. N. H., by H. M. Bannerman.)

Editor's Note

Though Fluorite has been known for over 100 years to mineralogists as occurring in Westmoreland, the actual place of any occurrence was not known to the villagers until the discovery of the Bill Mine was made. Soon after this discovery, every resident of the district, for miles around, had nice big chunks of green spar (fluorite) usually placed near their front doors.



Map showing location of fluorite mines in New Hampshire.

THE GEOLOGY OF BRADFORD COUNTY, PENNSYLVANIA

By RICHMOND E. MYERS, Geologist

Penna. Water & Power Co., Lancaster, Pa.

Geology is all around us. As you drive through the country around Towanda, if you keep your eyes open, you will see on all sides clues that can tell you the story of what took place millions of years ago.

Bradford County lies entirely in the physiographic division of the Appalachian highlands known as the Allegheny Plateau, an area of relatively horizontal layers of rocks, into which streams have cut their valleys to considerable depths. The divides are flat topped areas and the valleys steep-sided, almost canyon like in appearance. The highest point on the plateau in Bradford County is known as Armenia Mountain, with an altitude of 2391 ft. However, the average altitude of the plateau surface is under 2000 ft. The Susquehanna River has cut its valley 600 to 700 ft. below this surface, and its tributary streams such as Wysox, Towanda, and Sugar Creeks have eroded valleys not quite as deep.

The rocks of the county are all sedimentary. For the most part they are shales and sandstones of upper Devonian age. That means that they were formed about 260 million years ago, when the sediments of which they are composed were washed by streams flowing from the southeast into a sea that then covered the area where we now find theAllegheny Plateau. Proof of this can be seen in the fossil remains of sea shells found in such places as Lime Hill south of Wysox. Later these sediments were compacted into rock, and raised from the sea bottom into their present position in a great mountain building era known to geologists as the Appalachian Revolution, named from the mountains it created. This took place about 170 million years ago.

To the south of Bradford County this uplift buckled the rocks into great parallel folds forming ridges and valleys. The Wyoming Valley was formed by a great downfold. Often this deformation left the rock layers standing on end. Frequently the rocks were broken and beds were pushed over one another. In Bradford County, however, the rocks suffered little folding or faulting.That is why we see their layers, or strata, mostly as horizontal beds as we drive through the county.

At the time the uplift ceased, the plateau was much higher than at the present. Above the summits of today, a series of younger formations existed, that have long since been removed by erosion. We must remember that the earth is continually being worn down by the forces of nature. These rocks that have been removed belonged to the Carboniferous period, and contained beds of coal. In a few places, high up on the plateau, remnants of this Carboniferous material have been left. This explains why we have to go way up into the "mountains" to mine coal. The same beds were folded down in the Wyoming Valley, and due to the pressure and heat generated by the folding were changed into anthracite.

All of Bradford County was at one time covered with glacial ice. As a result, the bedrock of the county today is buried in many places under a veneer of boulders, cobbles, pebbles, sands or clays, ranging in thickness from a few inches to many feet. This material is composed of many different varieties of rock, some of which are not found as bedrock in Bradford County, and whose origin can be traced hundreds of miles to the north. Geologists have discovered that these deposits were laid down in three distinct periods of glaciation, all of which took place during the Pleistocene Epoch, the name by which the time of the last ice age is designated. This epoch ended roughly about 25,000 years ago.

The Susquehanna Valley in Bradford County, Penn. Note the narrowness of the passageway. Flood plain on the right is the site of the French colony of Azilum, 1793-1803. Rrailroad is the Lehigh Valley.

Ice is nature's greatest bulldozer. When the glacier invaded Bradford County it pushed enormous amounts of soil and rock in front of it, plucking additional large quantities of bedrock loose to carry it along as tools with which to break up further the terrain over which it moved. In places scratches and grooves made by these grinders may be seen in the bedrock today. They are clues which show us the direction in which the ice moved.

When the ice melted, the rock materials which it was carrying were deposited all over the landscape. It is in this manner that Standing Stone was probably dropped into its present position. Deposits of the glacial materials that had been shoved around by the ice were left piled up in the valleys. These accumulations are known as kames and moraines today. Spanish Hill above Athens was formed in this manner.

The water pouring south from the melting ice, widened valleys, turned northward flowing streams south, and generally created many major changes in both the topography and the drainage of the county. It formed numerous lakes, the largest of which lay north of Tioga Point extending well into New York State. Another ponding existed between Towanda and Wysox, extending up both the Wysox Creek and Towanda Creek considerable distances. At one time the entire valley of the Susquehanna River in Bradford County was a long "finger" lake. Another good sized glacial lake existed in the southwestern corner of the county in the valley now occupied by the town of Grover. This lake overflowed to the south down the valley of Lycoming Creek. Prior to the coming of the ice, this part of the valley (in Lycoming County) probably drained northward, through Towanda Creek to the Susquehanna. It has been suggested that the portion of the Susquehanna River above its present junction with the Towanda Creek, originally drained northward to meet the Chemung and then east to the Great Bend, from which point it flowed south to the sea through the present Delaware Valley. Whether this was changed by the glaciers, or by preglacial adjustments to slope, is too complicated a question to discuss without adequate maps and diagrams. What is more, the answer to this question must be sought outside of Bradford County.

In the Susquehanna Valley a series of three terraces composed of sands, gravel, and some cobbles, exist above the river bed. These are remnants of former flood plains deposited when tremendous quantities of water were pouring down stream. The terraces are composed of glacial materials, and can therefore be dated as Pleistocene in origin. They are the clues which point to three periods of Pleistocene glaciation, and they are particularly well developed in the valley north from Towanda to the state line.

Bradford County has no volcanic rocks. It can boast of no volcano. Neither has it any known commercial deposits of gold, silver, iron, copper, or any other metallics. It does have some coal, and recently there has been talk about petroleum, natural gas, and even uranium. These, of course, are all possible, but very problematical. However, the county is rich in two great natural resources, its cover of glacial deposited material, and some of the finest scenery in the east. The glacial deposits are an abundant source of ground water, and water is undoubtedly one of the most valuable of our natural resources. Scenery too is a resource, for it attracts many people from outside the county to visit and vacation here, to say nothing about giving enjoyment to the people who make their homes in the county all year round.

For the person who might care to read further about the geology of Bradford County, there is a little material available for the general reader. The following works are recommended, but the list is not offered in any way as a complete bibliography on the county.

Ashley, George H. *The Scenery of Pennsylvania,* Pennsylvania Geological Survey, Bull, G-6, Harrisburg, 1933.

Ashley, Geoge H., *The States "Thru-Valleys",* Pennsylvania Dept. of Internal Affairs Bulletin, Vo. 14, No. 4, Sept. 1937.

(*Continued on Page* 178)

PEGMATITE MINERALS OF THE UNITED STATES

By DAVID M. SEAMAN

Harvard University, Cambridge, Mass.

PART II—URANIUM and THORIUM OXIDES, HYDROXIDES, MULTIPLE OXIDES, MULTIPLE OXIDES CONTAINING COLUMBIUM, TANTALUM and TITANIUM.

Uranium and Thorium Oxides (4)

URANINITE, uranium dioxide, always more or less oxidized occurs in small quantities in many pegmatites of the United States but none of these occurrences are of economic importance. Through its property of radioactive disintegration, uraninite has been the most frequently used mineral in pegmatites and other rocks where it occurs for age determinations.

A number of pegmatites of Maine, New Hampshire, Connecticut, North Carolina, etc. have produced excellent specimens of uraninite. The Ruggles Quarry at Grafton Center, New Hampshire, is undoubtedly the most noted locality for this mineral in the United States. Here occur crystals in cubes and cubo-octahedrons sometimes modified by the trapezohedron. An area of perhaps a hundred feet or more of uraninite and its alteration is exposed high in the wall at one end of the quarry and is at present inaccessible, though specimens do break off and may be found at the foot of this wall at times.

Elsewhere cubes and cubo-octahedrons have been found at the Deake mine in Mitchell county, North Carolina, and masses up to six pounds in weight at the old Flat Rock mine in the same district. The best known places in Connecticut are at Middletown, Portland, Branchville, South Glastonbury and Haddam Neck. Noted also at Centre Strafford, New Hampshire; Richville Station and Bedford, New York; numerous occurrences around Spruce Pine, North Carolina; Barringer Hill, Texas; Ingersoll mine and elsewhere in Pennington County, South Dakota.

The uraninite is usually surrounded by a number of alteration products as gummite, clarkeite, uranophane, autunite, torbernite, etc. There is a beautiful unaltered (visibly) octahedral crystal of uraninite from Newry, Maine, about three-quarters of an inch in diameter in the Harvard University collection which was acquired about two years ago from a collector.

THORIANITE, thorium dioxide, with uranium substituting for part of the thorium, lead usually present and presumably of radioactive origin, cerium and lanthanum apparently substituting for thorium also and some helium usually present is a very rare mineral in pegmatites. Cubo-octahedrons have been secured in serpentine at the contact with limestone and pegmatite where it probably has been derived from pegmatite solutions at Easton, Pennsylvania.

GUMMITE, a general or field term applied to substances essentially of oxides of uranium and usually with thorium, lead, and relatively large amounts of water is frequently found surrounding uraninite as one of its alteration products. It occurs abundantly at Grafton Center, New Hampshire; also from Branchville, Connecticut; Newry, Maine; Spruce Pine District of North Carolina; Petaca district of New Mexico and elsewhere. A thorian variety occurs as an alteration of uranian thorianite at Easton, Pennsylvania.

CLARKEITE, a dark brown, hydrous alteration product of uraninite occurs with gummite at Spruce Pine, North Carolina; Grafton, New Hampshire and elsewhere. Some specimens from Spruce Pine exhibit a central core of black uranite, surrounded successively by alteration zones of dark reddish brown clarkeite, orange-red gummite and bright yellow uranophane.

Hydroxides and Oxides Containing Hydroxyl (2)

MANGANITE, a basic oxide of manganese with hydroxyl, occurs with other manganese minerals and it frequently alters to pyrolusite. It has been recorded in pegmatite at the Bennett quarry, Buck-

field, Maine, and the Palermo quarry, North Groton, New Hampshire.

PSILOMELANE, a basic oxide of barium, bivalent and quadrivalent manganese and hydroxyl, is a common mineral of secondary origin occurring often with pyrolusite and other manganese minerals usually as botryoidal, reniform, or mammilary crusts or stalactitic. Noted rarely in pegmatite as at Buckfield, Maine.

Multiple Oxides (5)

GOETHITE, hydrogen iron oxide with manganese present as an impurity is one of the most common minerals and after hematite is the most common of the ferric oxides. This species includes most of the material formerly classified as limonite. It is a secondary mineral often associated with hematite. Not uncommon in pegmatites but most often observed as pseudomorphs after crystals of pyrite.

Excellent crystallizations of goethite, botryoidal or reniform and with a radial, fibrous structure are found at St. Peter's Dome and near Florissant, Colorado: the most noted localities in the United States. As pseudomorphs after pyrite, goethite has been found at many pegmatites as Newry, Maine; North Groton, New Hampshire; Bedford, New York, also White Plains, New York; Portland, Connecticut; etc. Massive goethite is present as a coating on the rocks at a number of pegmatite localities.

SPINEL, magnesium and aluminum oxide is extremely rare in pegmatite if it occurs at all. Blue spinel has been reported from the Mack mine near Rincon, California.

GAHNITE, zinc and aluminum oxide is rarely met with in pegmatites for it usually occurs as a contact mineral in metamorphic limestones or in crystalline schists. Green crystals of gahnite to three-quarters of an inch in diameter have been found at the Schoonmaker mine, Portland, Connecticut. Gahnite has been noted elsewhere at Haddam, Connecticut; large masses near Newdale, North Carolina, and small crystals at the Deer Park No. 2 mine near Penland in the same state.

In smaller amounts at the Deake mine and Chalk Mountain in Mitchell county, North Carolina. A mass of gahnite weighing about fifteen pounds was found at the Fisher quarry, Topsham, Maine. Noted also at Middletown, Pennsylvania; in Georgia, etc. In crystals from Topsham and Bowdoinham, Maine.

MAGNETITE, oxide of iron, magnetic iron ore, is one of the most common and abundant of oxides. It is found in many kinds of rocks, often in pegmatites though usually in small amounts. Some pegmatites have been mined for their content of magnetite. It is most frequent in the simple type of granite pegmatite with quartz, feldspar and mica and some garnet and black tourmaline, other iron bearing minerals. Crystals are infrequently found, the material more often being of massive character. Octahedral crystals to an inch in diameter have been found at Standpipe Hill, Topsham, Maine; West Townsend, Massachusetts; and at Amherst, New Hampshire. Smaller crystals occur at Bridgeton, Maine, and other places. Magnetite pegmatites carrying as much as ten percent iron have been noted in northern St. Louis county, Minnesota. These are comparable to those at Lyon Mountain, New York, which have been worked together with the vein magnetite deposits. Magnetite crystals to two and one-half inches in diameter occur in the McMullen leasee of the Eight Mile Park area of Fremont County, Colorado.

CHRYSOBERYL, an oxide of beryllium and aluminum, while a rather rare mineral is typically found in pegmatites and mica schists. Most crystals are twinned, sometimes giving a hexagonal appearance to them. Very rarely has a specimen of chrysoberyl been found in the United States clear enough to cut into a gem stone. But a few have perhaps been taken from some of the Maine localities. The varieties cats-eye and alexandrite have not yet been found in the United States.

Chrysoberyl occurs in Maine at Auburn, Paris, Norway, Peru, Buckfield, Hartford, Stoneham, Canton, Stowe, Minot, Greenwood, and Topsham. Crystals have been found to 4x5 inches at Hooper's ledge, Paris Hill, Maine. In 1941, a termination of a crystal was

found at Paris, Maine, by Philip Morrill which weighed three and one-half pounds. It was part of a crystal with an estimated weight of ten pounds and is perhaps the largest chrysoberyl crystal ever found in the United States and perhaps in the world. Numerous smaller crystals were also obtained at this locality. However Maine's two most noted localities are at Witt Hill in Norway and the occurrence at Ragged Jack Mountain at Hartford.

The mineral has been recorded elsewhere from Grafton, Orange, and Wakefield, New Hampshire; Haddam, Connecticut (crystals to 2½ x 3 inches); Greenfield, New York; a few gem crystals at Broadway and 164th Street in New York City, New York; Drew Hill near Golden, Colorado (crystals to 1 x 4½ x 5½ inches and weighing two and one-half pounds); Devils Head, Colorado; and near Lovelock, Pershing County, Nevada. Chrysoberyl has also been reported from Stanwood and Big Star, Butte county, California; and from Winterham, Virginia.

Multiple Oxides Containing Columbium, Tantalum, and Titanium (14)

PYROCHLORE, essentially a sodium, calcium, columbium oxide with fluorine, occurs typically in pegmatites. It has been found at the Rutherford mine near Amelia Courthouse, Virginia; Newry, Maine; near Wassau, Marathon county, Wisconsin; and in San Diego county, California. The uranium variety, hatchettolite, occurs with samarskite and in part grown in parallel position upon it in Mitchell county, North Carolina. Pyrochlore has also been reported from Pala, California, and from New Mexico, probably from the Petaca district. Most pyrochlore occurrences are in the lithium type of pegmatite.

MICROLITE, essentially as sodium, calcium, tantalum oxide with fluorine and hydroxyl forms a series with pyrochlore and is found chiefly in lithium pegmatites also, together with tantalite and columbite and often between plates of cleavelandite.

Microlite was first found as tiny octahedral crystals at Chesterfield, Massachusetts, and hence its name. Green crystals of microlite, an unusual color for this mineral which is usually brown or yellow, were found at The Fisher quarry at Topsham, Maine, in 1933, the largest of which reached an inch in diameter. Many of the Topsham crystals are twinned. At Newry, Maine, some of the yellow crystals found with cleavelandite measured three-quarters of an inch in diameter. Still larger brown crystals of microlite, more than three inches in diameter, have been found with cleavelandite at Amelia Courthouse, Virginia, one of which weighed eight pounds. Smaller crystals have been noted at the Harding mine near Embudo, New Mexico; Branchville, Haddam, Haddam Neck, Middletown, and Portland, Connecticut; Black Mountain, Rumford, Maine (yellow crystals with dark brown cores); Ohio City, Gunnison county, Colorado, as small crystals embedded in lepidolite, the commercial ore of this locality; at Hemet, Riverside county and in San Diego county in California.

FERGUSONITE, is essentially an yttrium, erbium, cerium, iron, columbium, tantalum, titanium oxide. It occurs chiefly in pegmatites with a rare phase associated with columbium, tantalum and beryllium minerals and with zircon, biotite, magnetite, gadolinite, thalenite, orthite, euxenite, etc.

The most noted locality for fergusonite was at the now submerged locality at Barringer Hill, Llano county, Texas, where crystals to five pounds in weight and eight inches in length and one inch thick were obtained associated with gadolinite, biotite, microcline, quartz, fluorite, and a variety of rare earth minerals. Usually it was immediately associated with cyrolite, uraninite, mackintoshite, thorogummite, and gadolinite and sometimes enclosed by the latter mineral.

Fergusonite has been recorded from Rockport, Cape Ann, Massachusetts; at the Grassy Creek mine near Spruce Pine, North Carolina, and other mines in the same area; at Amelia Courthouse, Virginia; at the Fridlund dike near Petaca, New Mexico; and in small crystals at Torrington, Connecticut.

STIBIOTANTALITE, antimony, tantalum oxide is an extremely rare mineral.

It has been found at Topsham, Maine, and in fine crystals at Mesa Grande, California. It has been reported from Berlin, New Hampshire, and the Black Hills of South Dakota.

STIBIOCOLUMBITE, antimony columbium oxide forms a series with stibiocolumbite. Fine crystals have been found only at Mesa Grande, San Diego county, California.

ARIZONITE, iron, titanium oxide has been found associated with gadolinite in a pegmatite about twenty-five miles southeast of Hackberry, Mohave county, Arizona.

TAPIOLITE is essentially an oxide of iron and tantalum with some substitution of columbium. It is rare but has been noted at Topsham and Paris, Maine; and at several places in Minnehaha Gulch near Custer, South Dakota.

COLUMBITE, iron, manganese, columbium, tantalum oxide forms a series with tantalite, where tantalum is the prevalent metal present. Both occur in pegmatites marked by albite and lithium silicates with a manganese and iron phase. Typically associated minerals are albite, microcline, beryl, lepidolite, muscovite, black and lithium tourmalines, spodumene, lithiophilite-triphylite, amblygonite, triplite, samarskite, apatite, microlite and often cassiterite. Less commonly pollucite, petalite, gadolinite fluorite, topaz, wolframite and phenakite are found with them. Columbite is much the more common mineral.

Columbite occurs in small amounts in many pegmatites of the New England states. In Maine at Greenwood, Paris, Stoneham, Auburn, Standish, a mangoan variety at Black Mountain in Rumford, and in crystals to three feet in length and two inches thick at Newry. In New Hampshire at Plymouth and South Acworth. At Beverly and Chesterfield, Massachusetts.

The original specimen of columbite was found prior to 1734 near New London, Connecticut, with the exact locality being unknown. Elsewhere in Connecticut columbite occurs at Haddam, Haddam Neck, Portland, Middletown (one crystal of six pounds) and Branchville (manganoan-columbite). From Greenfield, Saratoga county, New York, with chrysoberyl, and at Bedford, (an eleven and one-half pound crystal). From Mineral Hill and Boothwyn, Delaware county, Pennsylvania. With samarskite in Mitchell and Yancy counties, North Carolina; also in Alexander county in the same state. Near Storeville, Anderson County, South Carolina. Masses of columbite have been found near Amelia Courthouse, Virginia, to eight pounds in weight.

In the western states columbite occurs at Rincon and Ramona, California; in Boise county, Idaho; in the Bridger Mountains of Wyoming; at Florissant, Colorado, and on Turkey Creek near Morrison, Colorado. Extremely large crystals and masses to six hundred pounds in weight have been found at the Etta Mine near Keystone, South Dakota. One crystal from here weighed fourteen pounds and a group of three crystals weighed thirty pounds. A single group of large flattened crystals from the Ingersoll mine near Keystone weighed about a ton. Columbite has been noted also in the Tinton area, Lawrence county, near Custer, Custer county, near Hill City, Oreville, and elsewhere in Pennington county, South Dakota. Also in the Petaca and Harding mine districts in New Mexico.

TANTALITE with the same composition as columbite with tantalum prevaling over columbium, occurs along with columbite in many pegmatites. It has been found at Paris, Maine; in Coosa county, Alabama; at Amelia Courthouse, Virginia; at Pala, California; in the Bridger Mountains of Wyoming (one crystal of sixty pounds) from the J. L. Funk mines near Fox Park; in Lawrence, Custer, and Pennington counties of South Dakota; from Mitchell and Yancy counties, North Carolina; and from the Petaca district of New Mexico.

EUXENITE, is a complex columbium, tantalum, titanium oxide with yttrium, calcium, cerium, uranium and thorium. It forms a series with Polycrase where titanium is present in larger amounts than columbium and tantalum. It occurs in large quantities in association with biotite, muscovite, ilmenite, monazite, xeno-

time, zircon, beryl, magnetite, garnet, allanite, gadolinite, blomstrandine, and less frequently with thorite, uraninite, betafite and columbite.

Euxenite has been found at Morton, Delaware county, Pennsylvania, in fine crystals. It occurs in the Yard and Luella pegmatites near Buena Vista, Chaffee county, Colorado, from Colorado Feldspar pegmatite near Cotopaxi, Colorado, in large masses, and crystals. It has been reported from the old Wiseman Mica mine near Spruce Pine, North Carolina, and from the McKinney mine near Little Switzerland, North Carolina.

POLYCRASE, with the composition mentioned above is rarer than euxenite in the United States. It was found at Barringer Hill, Llano county, Texas, with gadolinite and rare earth minerals. Also occurs near Marietta, Greenville county, South Carolina; and on the Davis farm near Zirconia, Henderson Country, North Carolina. Recently found in crystals from Day, Saratoga county, New York.

YTTROCRASITE, is essentially an oxide of rare earths and titanium. It has been identified in a pegmatite in Burnett county, Texas, about three miles east of the Barringer Hill pegmatite in Llano county.

SAMARSKITE, is an oxide principally of the rare earths, calcium, iron, uranium and thorium, with columbium, tantalum, and titanium. It is often closely associated with columbite. Other associated minerals are monazite, magnetite, zircon, beryl, biotite, uraninite, muscovite, aeschynite, albite, topaz, and garnet. Oriented growths of columbite with samarskite, with the crystal axes of the two minerals parallel, are frequently found, and oriented growths of uranian microlite upon samarskite have been noted.

Occurrences for samarskite are at the Wiseman mica mine, Greasy Creek township, Mitchell county, North Carolina, with columbite, uranian microlite, and muscovite. It is quite abundant in the Spruce Pine district of North Carolina where masses a foot or more and weighing twenty pounds have been found as at the McKinney mine near Little Switzerland. It also occurs at Jones Falls near Baltimore, Maryland; elsewhere at the Spinelli quarry, South Glastonbury, and at Pelton's quarry, Portland, Connecticut. With monazite at Topsham, Maine. Near Ohio City, Colorado, with columbite, albite, topaz and beryl in a lepidolite-rich pegmatite, and with cyrolite at Devils Head in the same state. From Nuevo, California, crystals to four inches in length have been obtained in the Petaca district in Rio Arriba county, New Mexico, especially in the Fridlund dike. At the latter locality it occurs with uraninite, gummite, uranophane and monazite. In tiny crystals at Overlook, New York.

BETAFITE, essentially an oxide of columbium, tantalum, uranium, calcium, and titanium is found with the rare earths and euxenite, fergusonite, allanite, altered zircon and beryl. It has been reported from near Ohio City, Gunnison county, Colorado, in a lepidolite-rich pegmatite with cleavelandite, topaz, beryl, microlite, lithia-tourmaline, microcline, muscovite, zinnwaldite, samarskite, biotite, fluorite, gahnite, garnet, columbite and monazite.

Summary, Uranium and Thorium Oxides, Hydroxides, and Multiple Oxides

Uraninite, gummite and clarkeite are fairly common minerals in the pegmatites of the United States but only in small amounts. The hydroxides, manganite and psilomelane have been noted only rarely in pegmatite. Goethite, magnetite and gahnite are not uncommon minerals at some localities. Magnetite has been mined from pegmatites at Lyon Mountain, New York, and from Wisconsin, but these are very rare concentrations of this mineral in pegmatite. Chrysoberyl has been found at numerous localities usually in only a few isolated crystals but there are some localities where it is fairly abundant but not abundant enough for a beryllium ore. The multiple oxides containing columbium, tantalum, and titanium occur mostly in the rare earth type of pegmatite or in lithium pegmatites. Columbite and tantalite are most aboundant in lithium pegmatites and would be much in

(*Continued on Page* 178)

COLLECTING NEAR SALT LAKE CITY, UTAH, BIG COTTONWOOD CANYON

By CARL F. AUSTIN
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About a year ago I moved to Salt Lake City, Utah, from U.S. Vanadium's Pine Creek Mine in California. Since I am an avid mineral collector I immediately began searching the local country-side for specimens.

One mine dump in Big Cottonwood Canyon showed some possibilities. This area is only about twenty minutes drive from Salt Lake. I am not sure of the name of the mine but it is just west of the "Roy Newman Prospect."

The dump showed plumbojarosite, galena, and quartz crystals. As a senior mining engineering student and miner by trade I prefer to do my collecting in place when possible. Another engineer, Dave Neilson, and myself recently made a trip through a portion of the mine in order to check geology, lease possibilities and to look for specimens. The following are our mineral findings to date:

About 70 feet from the portal of the main haulage drift a short crosscut yielded native gold in limonite. The gold pans easily and much of the limonite is present as small pseudomorphs after pyrite. The original pyrite appears to have selectively filled solution cavities in limestone.

Two hundred feet in a short raise follows a ½" stringer of tetrahedrite. The material is too soft for good specimens.

Twelve hundred feet in the following assemblage is found in a 2" stringer in the back of the drift: dyscrasite, jamesonite, tetrahedrite and pyrite. The dyscrasite was identified from polished section by the U. S. Bureau of Mines. We had trouble getting much out as we had to work with a single jack and moil from a staging.

At 1250 feet a raise leads up into a large untimbered stope. Pillars show 2 to 3" veins of tetrahedrite and give very good specimens, although hard to reach. Some galena occurs with the tetrahedrite. A vuggy vein in the stope floor gave us the following: pyrite—perfect pyritohedrons up to ¾" in diameter, calcite—perfect twin (doubly terminated) scalenohedrons up to 1" long, quartz—good 1" crystals. All of these are enclosed in white flexible papery masses of what I think is tremolite. Stringers in the stope walls contain galena, sphalerite, and pyrite in 1½" cubes. The cubes are too badly shattered at the surface to be removed.

Two thousand feet in the drift goes through a minor contact which gives a little epidote. We didn't have time to examine the area very closely.

At 2200 feet the drift encounters a fissure type vein which we intend to explore on our next trip.

Large masses of fluorescent (red) calcite are present in all of the stopes.

I would like to mention one word of caution to any in the area who would like to go underground in Big Cottonwood. *Always* carry an open light other than a carbide, preferably a flame safety lamp such as my partner and I use. One mine in the area contains normal air for 500 feet, then in 20 feet the air content drops to below 13.5% O_2! This is low enough to cause almost immediate loss of consciousness.

The following is a summary of the minerals found to date. In the future I hope to be able to add to the list.

1—Limonite. 2—Malachite. 3—Azurite. *4—Calcite. *5—Quartz. 6—Halloysite. *7—Tremolite. 8 — Chlorite 9 — Muscovite var Sericite. 10—Epidote. *11 ——Plumbojarosite. *12 — Native Gold. *13—Pyrite. 14 — Dyscrasite. *15 — Jamesonite. *16—Tetrahedrite. 17—Sphalerite. 18—Galena. 19—Bornite. 20 — Covellite. 21—Chalcopyrite. 22 — Psilomelane (plus other Mn oxides). 23 — Cerussite. 24—Angelsite.

*Good specimens found.

FRANKLIN, NEW JERSEY: STILL A COLLECTOR'S DREAM

By BEVAN FRENCH

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Most collectors are usually pro or con as regards the collecting done at the famous Buckwheat Dumps at Franklin, New Jersey, but it is noted that the majority of collectors to be found on the dumps are usually pro in their sentiments.

Those who shrug Franklin off as worked out and the dumps as worked-over are missing a good bet both ways, for neither of these beliefs is true. While the Franklin mines can be expected to have only a year or so more left in them, they are still producing good material, if one can get it. Among this is yellow hedyphane, leucophoenicite, and transparent violet hodgkinsonite, not to mention the fluorescents: willemite, clinohedrite, hardystonite, calcium-larsenite, and barite.

Also, while it is true that the Buckwheat Dumps have probably felt more rockhounds' footsteps than most other localities, it is not true that nothing of any collecting value remains. Probably much of this bad reputation is due to the more or less novice collectors who go to Franklin expecting to find five-inch crystals of a mineral that never got by the picking table when it was first found; needless to say, they are disappointed. They return and tell their friends that Franklin has nothing left.

This past summer, a job near Franklin gave me the opportunity to spend a great deal of time on the dumps, just looking around to see what could be found. No deep digging or backbreaking rock-moving was done, but even so, the results both satisfied and pleased me, when I looked them over at the end of the summer.

According to DANA'S TEXT BOOK OF MINERALOGY, Fourth Edition, the minerals collected broke down into their chemical groups like this:

Native Elements: Graphite

Sulfides: Molybdenite, Pyrite, Pyrrhotite, Sphalerite

Haloids: Fluorite

Oxides: Corundum, Franklinite, Gahnite, Hematite, Limonite, Magnetite, Manganite (?), Psilomelane, Quartz, Zincite

Carbonates: Aragonite, Calcite, Dolomite, Hydrozincite, Malachite

Silicates: Anorthoclase, Axinite, Biotite, Calamine, Caswellite, Diopside, Edenite, Epidote, Garnet, Jeffersonite, Microcline, Muscovite, Norbergite, Phlogopite, Rhodonite, Schefferite, Serpentine, Tephroite, Tourmaline, Tremolite, Willemite, Zinc-Schefferite

Phosphates: Apatite, Manganapatite Svabite

This adds up to a total of forty-six different minerals, which is pretty high for any locality. Also, most of the above were more or less plentiful, and it is quite probable that the average collector, interested in a representative Franklin collection, could make an excellent start by collecting on the dumps.

But most collectors are not interested in strict quantity; they like (and who doesn't) a few crystals that aren't micromounts and that anyone can see and appreciate. This, however, is no reason to turn away from Franklin. Let me mention here some of the quality pieces that were found last summer. They are not sensational by the discriminating collector's standards, but for Franklin today, they are excellent.

Polyadelphite xls: Several crystals of this brown garnet mineral were found; by far the best and largest was a half-inch crystal imbedded in massive garnet. Evidently some collector had split up a large mass of the massive material, taken what he wanted, and gone away, leaving the crystal sitting there until it was found.

Gahnite: Small green octahedral crystals, quite a rarity, were seen in a small piece of white calcite. The mineral, a member of the spinel group, is usually seen in old collections, but it is quite rare nowadays.

Tephroite: Most Franklin collectors have a piece of the silicate mineral, but how many have been fortunate enough to collect it? The specimens found this summer all came from a large chunk of massive franklinite with a ¾-inch vein of massive red-brown tephroite running through it. The material was graciously identified by an employee of the New Jersey Zinc Company, and it was the first that I had ever collected.

Franklinite xls.: Just about the commonest mineral on the dumps, this franklinite, and yet very few have collected really good crystals. The ones found this summer were of two types: extremely well-formed little octahedrons in calcite (about ¼-inch), and larger, more distorted crystals. One distorted octahedron measured three-quarters of an inch on an edge.

Zincite xls.: Crystals of this mineral are rarely seen. No crystals were collected, but a piece of massive zincite showed the matrixes of two ¼-inch crystals of that mineral, showing the typical hexagonal pyramid. No doubt the other half of that piece, with the crystals, is still sitting on the dumps. Associated with the zincite were coarse willemite crystals.

Sphalerite xls.: We turn now to the familiar dolomite limestone which furnishes Franklin collectors with most of their good micromounts. Readers of ROCKS AND MINERALS will remember that the brookite crystals (1) which were found in this material marked the first finding of that mineral from Franklin. More common are nice crystals of sphalerite, ranging from small, sharp crystals suitable for micromounts to larger ones of about ¼-inch in size.

Quartz xls.: Good quartz crystals are rare at Franklin, and are usually found in the aforementioned dolomite limestone. The specimens found ranged up to clear crystals of about ¼-inch, with good faces. The mineral was also noted in groups and singles of acicular crystals which have excellent possibilities as thumbnail and micromount specimens.

Epidote xls.: Masses of green epidote with red feldspar are not uncommon, and this material is sometimes cut and polished. But some small epidote crystals were noted with feldspar and zinc-schefferite. They were associated with massive epidote and showed a deep green color.

Some other specimens were found on the recent Eastern Federation of Mineralogical and Lapidary Societies' trip to Franklin that were enough to delight any collector. These included a three-inch pyroxene crystal, excellent specimens of manganese dendrites (manganite), a malachite vein in calcite, and a group of as-yet-unidentified hexagonal crystals, possibly apatite. Another recent find was that of a specimen of crystalline graphite, in contrast to the usual scales in limestone found at Franklin.

It is unnecessary to mention the fact that Franklin is well-known for its fluorescent minerals. Collectors have been prowling the dumps with ultra-violet units ever since they heard that one could find them that way. The best fluorescent material probably does come from the mines, but sometimes it is not always available. But don't give up; a little looking over the dumps at night, and you are very likely to come up with most of the following minerals:

Willemite-Calcite: This is probably the commonest and most spectacular of the present-day Franklin fluorescents. It is usually seen in a mixture called "Buckshot Ore", green grains of willemite in the red-fluorescing calcite making very attractive specimens, especially when the willemite is phosphorescent.

Norbergite: This mineral is found in brownish grains in the Franklin limestone, usually in the limestone quarries near the Buckwheat Dumps. Sometimes, it may be found on the dumps in limestone boulders. In both locations, it is associated with graphite, pyrrhotite, and corundum. It fluoresces various shades of yellow. The darker varieties, containing more iron, are less likely to fluoresce.

Diopside: As far as I can find out, this material is relatively new to Franklin. This pyroxene mineral was found as

gray crystals in the limestone quarries and was associateed with norbergite. The crystals, gray to colorless, fluoresced a bluish-cream under the short-wave ultraviolet light. The specimens collected were quite attractive.

Aragonite: This mineral is found with calcite and was probably due to surface alteration. One specimen collected several years ago showed a definite botryoidal structure and a bluish-gray fluorescence, as well as a noticeable phosphorescence.

Hydrozincite: Some excellent specimens of this zinc carbonate have been collected recently. The mineral is usually found with the primary zinc minerals, especially franklinite, usually as an incrustation. It fluoresces a bright blue.

Axinite: This is perhaps the rarest Franklin fluorescent. A small piece was collected last summer which contained massive pale-yellow axinite, and fluoresced a deep bluish-red, characteristic of the mineral.

Sphalerite var. cleiophane: This is one of the most showy minerals that can be collected. To one who has never seen a specimen of this mineral, I can describe its color only as "a bluish orange". While this term may sound ridiculous to a non-rockhound, it is the only one that can be applied suitably.

Specimens of this mineral were collected recently in a matrix of altered jeffersonite with the appearance of roepperite (2,3). The cleiophane was whitish and fluoresced orange and blue under short wave light. Contrary to the generally accepted rule among Franklin fluorescents, the cleiophane was brighter and much more pronounced under long wave ultraviolet.

Manganapatite: Grains of this mineral were associated with massive garnet. I am not sure about the identification, but it is a phosphate, and showing a pale orange fluorescence not exhibited by Franklin apatite. Similar material from Franklin has been dubbed manganapatite, so I am putting the same label on this material.

Calcium-larsenite and clinohedrite: I have not been fortunate enough to see actual specimens of these two minerals collected. They are the two most famous Franklin fluorescents, fluorescing a bright yellow and orange respectively. Nevertheless, both calcium-larsenite (4) and clinohedrite (5) have been collected on the dumps. The clinohedrite constituted a coating on calcite and was an excellent specimen.

So there you have it. Franklin is certainly one of the best triple-threat localities around this area; it boasts quality specimens, rare minerals, and fluorescents. What more could any collector ask?

But why do so many collectors turn away from Franklin and say there is nothing there? Perhaps the biggest reason is lack of information; the collectors have at best only a hazy idea of what the present-day Franklin minerals look like, and they let good finds get away unnoticed. Secondly, some people may tend to forget that it takes time and patience to find good material. The minerals collected that I mentioned here were not collected in one trip, but over a period of years. And lastly, it is necessary to temper one's hopes with the thought that, after all, thousands of collectors have been there before you.

However, the Buckwheat Dumps are still full of surprises. Recently, it was announced (6) that a specimen showing crystal casts after anhydrite had been found on the dumps. The casts were similar to the familiar ones which one encounters in the trap rock-zeolite region of northern New Jersey, but were microscopic, and contained in massive brown serpentine.

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To The Rockies . . . and Back

By ROBERTA and CHARLES WIGHT

46 Queens Avenue, Stratford, Connecticut

For a long time we'd been wanting to take a trip out thru "The Golden West", visit Yellowstone Park and just incidental like, stop along the way to call on mineral collectors and add a few more specimens to our collection.

Just in case you may cover some of the same territory we thought you'd like to know what we found of interest and possibly pass along a couple of worthwhile suggestions.

Our best tip came from Gerry and Will Shulman of Newark, N. J., who have covered quite a few miles themselves in quest of something new, and that was to take along plenty of swap material. Take along whatever is obtainable in your particular locality, and be sure you have good looking specimens. If you have any Franklin fluorescents by all means take some along, it really is in demand. We took out approx. 75 pounds of swap material and came home with the rubber bumpers occasionally hitting the rear axle housing. A rough guess would say we lugged back about five hundred pounds of assorted "dornics", a good portion of which we picked up along the way. (any volunteers for sorting?)

We left Stratford Sat. Aug. 1st, 1953 and arrived in Denver Thurs. Aug. 6th. We were in no hurry and stopped whenever the spirit moved us to visit museums and collect specimens. My wife doesn't drive so I drove the entire distance and we always had our motel before dark and after mapping out roughly our next day's route, we'd get a good night's sleep and start out about 7 a.m. We returned home Thurs. Aug. 20th, thus our trip was for a three week period.

We covered a total of 6771 miles from Stratford, Conn., to Yellowestone Park and return. Had no trouble locating motels along the way and drove only daytimes, putting up for the night about dusk. Tho our trip was originally laid out by AAA, we did go off the route to get to rock locations. The trip was for three weeks and we had plenty of time to stop whereever and whenever we chose. The weather was wonderful, had only one light shower and tho the temperature was around 100 at times, remember the humidity is relatively low and we didn't mind it as much as did the natives.

We went over the Penna. Turnpike, making no stops in Penna., as we are members of the Mineralogical Society of Penna. and get down there about once a month on field trips. We stopped at the Ohio State Museum (Ohio State University) at Columbus, Ohio, and saw a truly wonderful display. On Route 40 at St. Charles, Mo., which is roughly 6 miles west of St. Louis, we found our first selenite along the right hand side of the road. On Route 40 about 8 miles past Manhattan, Kansas, on the way west toward Junction City, we found fusilina in small mounds along left hand side of road. Next stop was Fort Hays State College Museum—a wonderful display. Near Oakley, Kansas, are the Kansas Pyramids and Sphinx, geological formations, but we were warned the roads were bad and we didn't get to see them.

At Genoa, Colo., is a place called "The Tower". Seven states may be seen from here on a clear day, but more important is the wonderful collection of rocks. Wouldn't you just know—the owner's name is Stone. Mr. Stone informed us the buildings are constucted of rock from all over the world and three trucks were literally worn out just bringing local stone to the site. Yes we did a little plain and fancy swapping and he has some for sale but most important—we made a friend. This location is really a sight to behold.

On Route 40, five miles beyond Limon, Colo., just past the junction of Routes 24 and 71, on the right hand side of the road is a large outcropping of selenite.

Don't bother asking if there is any agate in Agate, Colo. There Isn't. At Denver, Colo., by all means go to the

Hospitality Center at 225 West Colfax Ave. where they'll load you down with information about Denver itself and places of interest in Colorado. Some of the booklets we found interesting were "Colorful Colorado" — which besides having a map of state roads has a topographical map and lots of information. Ask for the Denver City Map, Prospectors Trails, and booklets on Boulder, Idaho Springs, Leadville, Loveland and etc. They're a wonderful help when touring the countryside, and they're yours for the asking.

The Denver Museum of Natural History in City Park and Colo. State Historical Museum in the State Museum Bldg. both have displays well worth seeing.

At Golden, Colo., about 12 miles from Denver, is located the Colorado School of Mines—a real worthwhile visit.

Nederland boasts a tungsten mine, Central City has a couple of fine museums and The Glory Hole Mine. At Garden of the Gods, there's plenty of varicolored sandstone. At Leadville there's still some silver, lead and zinc in the old dumps. At Climax get some of that beautiful white sand, tho you may be a "rocky" at heart it's good swap material.

Stop at The Red Elephant Mine at Idaho Springs and see Mr. Ellsworth. He not only will explain the workings but take you for a trip thru the mine and he has some wonderful samples of gold ore, chrysocolla, rose quartz, fluorescent coal, etc. at real low prices. He was real patient with us and just brimming with information. All above localities are in Colorado.

At Loveland stop in to see Cy's Rock Museum on Highway 34, they have a fine fluorescent display and are real friendly like.

The trip thru Grand Tetons in Wyoming was wonderful, and then on to Yellowstone where you could easily spend a week—just touring and soaking up the sights.

On Route 30, east of Laramie Wyo., plenty of beautiful sandstone mixtures. At Como Bluff is a building made of dinosaur bone. Plenty of agate, just south of Shoshoni, Wyo., on road to Riverton, 5 miles south of Shoshoni on Route 320 and 26, just beyond bridge, on right handside.

Stop in and see Mr. Haney at Sunset Cottages on Route 30 at Medicine Bow, Wyo., and look over his display of petrified wood. To collect petrified wood take the road north right beside the cottages and go north, to fork in the road which is approximately 30 miles. Turn left at fork and look for dirt road about quarter mile on left. Turn in about 200 feet and park the car. Walk to the ridge directly ahead about 100 feet and load up. This spot is shown on Wyoming State maps as Petrified Forest.

For moss agate, go as above to first fork but keep right for nine more miles, the section is called Little Medicine. At cross road, turn right, look for house on left side of road. Directly in front of house take road up the short slope, between two knobs or ridges. At the top of the ridge on right is the moss agate.

Don't bother going to Sweetwater Canyon, Wyo., for jade unless you know the locale or care to buy—there's just none available in the open.

Coming back we went to Geode State Park at New London, Iowa, and the caretaker gave us the following instructions.

Coming thru New London, headed east on Route 34, go thru the town and look for State Park sign on right. Turn right and drive for four and a half miles and turn right at small State Park sign. Continue straight ahead for half mile to school, where road divides. Turn left and go about three miles over a good dirt road to an iron bridge. Park just beyond the bridge on right hand side of road and go down into the creek bed and along the banks you can dig out the geodes. Of course a much easier way to get them is to go directly to Geode Industries, right on Route 34, just as you come into New London; and a chat with Earl Smith will be long remembered. He certainly was generous to us and we're still showing our friends the beautiful

bookends and ashtrays we purchased there. They're real attractive and mighty inexpensive too.

Of course there were places we went and specimens we lugged back that we haven't mentioned as we didn't intend this to be an itemized report, but we had a wonderful time and plan on getting out to New Mexico and Arizona next year to visit and chat and swap.

Just in case your'r planning a like trip we suggest you take along a car compass, it comes in mighty handy. Don't forget to have a good camera along, we have over a hundred colored slides to remind us of this trip. When you stop for gas, don't forget the station owner is a local man and can give freely of local information. Lots of luck.

HOW ONE MAN HOUSES HIS GARNET SANDS

By CHAS. S. KNOWLTON
143 N. Acacia, Fullerton, California

While it may not be entirely proper for a person to even suggest a way in which to house a collection, it might be alright for him to describe his method of storage, and particularly of bottles of sands. There is scarcely anything more messy and annoying than a jumble of odd sized bottles, mostly poorly labeled. While I am not overly methodical, in some respects I am just too lazy to have to hunt thru messes of small bottles trying to find some particular bottle. I had given the problem considerable thought without finding a satisfactory answer until one day a friend showed me some pieces of corrugated sheet aluminum. The valleys in the sheets were 1¼ inches apart, just the right spacing, and it was exactly what I had in mind, but had not seen.

As most of my several thousand mineral specimens are housed in cabinets with drawers of varying depths, I desired to use a certain shallow drawer for my Garnet Sand bottles. So I changed my not inconsiderable accumulation of selenites to a large and deeper drawer. This gave me a drawer 18 x 21 x 2 inches in size. I cut the aluminum to fit, with the corrugations running crossways. When the bottles are in the grooves there is no tendency for them to either roll or shift. There are seventeen grooves. While most of my bottles are about ¾ x 3 inches they will vary from quite small up to 1½ x 4 inches and yet they all fit the grooves. Then if enough more arrive they can be doubled up.

Many of the bottles have come with labels that I do not wish to destroy. In relabeling the bottles I unroll a strip of half-inch wet or dry adhesive tape (ordinary adhesive will dry and peel) and stick it on a piece of glass (it should be done in a warm room). Then I mark numbers on the tape with a non-fade ink. The small numbered squares can be easily separated by a single edged razor blade, then stuck on the bottles and trying to set them all in the same direction.

It seems probable that most collectors may have one particular specimen they would like to call number One. In my case it is a small bottle of red garnet sand that was picked up very close to what is now Erie, Pennsylvania, an even 105 years ago. Then possibly a few choice numbers will follow, then others as you come to them.

I got a 6-ring loose leaf book that is 4½ x 7 inches. I typed a foreword then devoted a page to Number 1 which is a part of our family history. It may be my reason for speciallizing on Garnets. No. 2 is garnet sand from the extreme southern tip of India and No. 3 is from the extreme eastern tip of Long Island. Other numbers trail along, mostly as they happened to come.

I started number 1 in the front left hand corner and filled the groove then came back to the left of the second groove, and so on. I soon found that if I numbered the bottles too soon that there might be spaces left at the right end so I put bottles in the grooves and then shuffles them until they fit without loss.

In this way it is easy to locate any particular number after referring to the catalog. Then I also gave my surplusses the same numbers as the specimens.

A question of sand particle sizes might be raised. When would sand change to gravel? I think that will always be a matter of personal choice. So far I have called them all sands if there are other particles than garnets in the mixture. If it is pure garnet I keep it with the garnets. Some of my specimens range up to three-sixteenths of an inch. If you were not to keep them with the sands where would you keep them?

While my chief interest is in Garnet Sands I do have a limited few non-garnets, some of which I had acquired in one way or another. When I get around to numbering them I think that I will give No. Al to a sand from under the iron fence that surrounds Plymouth Rock and that was sent to me by Mr. Wrathall, of Providence, R. I. It is of basic interest. Excepting that from Plymouth Rock I have saved nothing not of mineral interest. I have a small bottle of magnetite that was sent by air express on the last plane out of Guam before the Japs moved in. Then there are some pure crystals of zircon from Lincoln, Calif., some ilmenite sand from the East Coast of Sumatra and the West Coast of India, and mineral sands from certain interesting localities.

A few years ago we visited the very interesting and spectacular Mount Rushmore carvings in South Dakota and we picked up about a pound of sand from as close to the base as possible and then gave it all to a friend who collects, just sand, saving none.

For quite a few years I had been getting garnet sands to go with my Garnet Collection but had had limited chance to exchange until after Mr. Zodac timidly started "THE SAND COLLECTOR" in ROCKS AND MINERALS. He now finds that it brings him more specimens than does any other regular department. And I rather suspect that it is the direct cause of many interesting exchanges and correspondence. There are a few localities from which I would like to receive garnet sands, such as close to Eastport, Maine. I have a tiny sample from the western most point in the State of Washington and from the boundry line between Washington and British Columbia and from near the Mexican border in California, and from a number of foreign countries. While not all of these result from R&M correspondence it does to some extent indicate my interest. I am certain that had I started years sooner I might have had a much larger assortment of Garnet Sand.

Looking Back . . .

Twenty-Five Years Ago in ROCKS AND MINERALS

March 1929 Issue

A compilation of Gem Names, by Gilbert Hart, pp.17-19. A continuation of the longest list of gem names ever printed up to 1928.

Gem Department, conducted by Gilbert Hart, p.20. Iolite, one of the rarer gems, was featured.

Paleontology Department, conducted by Benjamin T. Diamond, pp.22-23. Pelecypoda, one of the most important as well as one of the most interesting groups of fossils, was featured.

Genesis of Sulphur, by P. Walther, pp.24-25. An interesting article by a subscriber who is still with us.

THE SAND COLLECTOR

Conducted by PETER ZODAC, Peekskill, N. Y.

Items on Interesting Sands Wanted. — Please Send Them In.

Attention readers: If anyone should want to send us a sand sample, please give us a little information about its source. At least tell where you collected it; and if it comes from some stream—tell us. Many sand samples are being rereived which are of no value because little or no information is sent us.

River Sand from Hassayampa, Arizona

This is a medium grained gray sand. It consists of quartz (colorless, smoky), black biotite, green epidote, white feldspar, and black magnetite. Donated by Seven Brothers, P. O. Box 4322, Phoenix, Ariz.

"Under separate cover we are sending you a vial of sand which comes from mid-stream (the river is dry at this time) of the Hassayampa River at Hassayampa, Maricopa County, Arizona.

"This location is close to Saddle Mountain, near the ghost town of Wintersburg, where the carnelian desert roses are found.

"Legend has it that if a person drinks of the water of the Hassayampa River the truth will never be in him again.

"We will send a vial of this sand to any collector desiring same, if he will send us a dime to cover cost of postage, etc."—letter dated Jan. 14, 1954, from the Seven Brothers.

River Sand from Kern River, Calif.

This is a gray, medium grained sand. It consists of quartz (colorless, smoky), black biotite, pinkish feldspar and black lustrous magnetite. Donated by Gordon ViGario, 2231 Pine St., Bakersfield, Calif.

"Sand is from the Kern River, Kern River Canyon, 2 miles up from Powerhouse 1, Kern Co., Calif. In 1885 the sands of this locality were panned for gold. Since this sand sample was taken from an old mining area, there might be some tiny specks of gold in it, though I think not."—letter dated Oct. 24, 1953, from Mr. ViGario.

Quartz Sand from Starved Rock, Ill.

From Horsehoe Canyon, Starved Rock State Park, LaSalle Co., Ill., we have a fine grained gray sand—all smoky quartz. The sand was donated by R. W. Nutting, 35 Forrest Drive, Pekin, Ill.

Beach Sand from Holly Beach, La.

Holly Beach, on the Gulf of Mexico, is in Cameron Parish, La. The beach is at the southern extremity of state highway 104 (about 60 miles from the west line of the State). It is a fine grained gray sand, and consists entirely of quartz (smoky, colorless, brownish). Donated by Glen E. Kiser, Douglass, Kans.

Blow Sand from Las Vegas, Nev.

This is a fine grained brownish sand. It is all quartz (smoky, milky, brownish, colorless). Donated by P. O. Drury, P. O. Box 1028, Las Vegas, Nev.

'Blow Sand'—so named as it blows freely in winds. Used mainly as the base material for new lawns in the Las Vegas area."—on label.

River Sand from Albuquerque N. Mex.

This is a medium grained gray sand. It consists chiefly of quartz (colorless, reddish) with white feldspar, lustrous black magnetite (some imbedded in quartz), and a few flakes of silvery muscovite. Donated by Glen E. Kiser, Douglass, Kans.

"Rio Grande River sand from near Albuquerque (Bernalillo Co.), N. Mex." —on label.

Lake Sand from Saratoga Lake, N. Y.

From the north bank of Saratoga Lake in Saratoga Co., N. Y., we have a sand simple that was collected for us by Mrs. Helen Wiebe, 310 Beach, Mamaroneck, N. Y.

This is a fine grained brown sand. It consists chiefly of quartz (colorless, brownish) with some flesh colored feldspar, pinkish garnet, black biotite, black lustrous hornblende, and black lustrous magnetite.

Shell Sand from Edisto Island. S. C.

This is a coarse grayish sand. It consists chiefly of sea shells (white, brown, blue) and colorless quartz. Collected and donated by Rev. Wm. J. Frazer, Moosic, Penn.

"The sand is from Edisto Island Beach (Charleston Co.), S. C., where the beach is steep, shell covered, and every wave is sand-and shell-fragment full! Not a place to bathe—to gritty!"—on label with the sand.

River Sand from Brewster Co., Texas

This is a fine grained brownish sand. It consists chiefly of quartz (colorless, smoky, reddish) with feldspar (gray, reddish) and black magnetite. Some brownish grains of zircon which fluoresce orange under the Mineralight also present. Donated by Prof. Richard M. Pearl, Colorado College, Colorado Springs, Colo.

"I'm sending you a small sample of stream sand from the U. S. bank of the Rio Grande where it emerges from Santa Elena Canyon in Big Bend National Park (Brewster Co.), Texas. We were there over the holidays and found it a fascinating place. Perhaps you don't yet have sand from this particular locality."—item in Prof. Pearl's letter, dater Jan. 6, 1954.

Lake Sand from Madison, Wisc.

Madison is the capital of Wisconsin. From a lake in the city we have a sand sample that was sent us by Geo. C. Morris, 1805 University Ave., Madison 5, Wisc. It is a fine grained dark gray sand consisting entirely of quartz (colorless, smoky, brownish) with some fragments of white shells from mollusks of various species.

"I am sending you a sample of sand dredged from Lake Monona, Madison (Dane Co.), Wisc. This dredging operation is for the purposes of building a swimming beach for Aldrich Park.

"You will note pieces of shells from mollusks of various species. Hope you can use this material in your collection." —letter dated Nov. 16, 1953, from Mr. Morris.

River Sand from Fortuna Ledge, Alaska

"The enclosed sand comes from the north bank of Yukon River at Fortuna Ledge, Alaska. Latitude 61° 50' N. Longitude 162°W. Collected by W. W. Allman at request of Frank Waskey, June 1933."—on label accompanying the sand which was sent us by Frank Waskey when he formerly resided in Dillingham, Alaska, but who now resides in Olney, Md. (Box 163).

This is a dark gray very fine grained sand consisting chiefly of quartz (colorless, smoky, brownish) with some brownish feldspar, whitish muscovite, and black magnetite.

Beach Sand from Darwin, Australia

Darwin, the largest city of the Northern Territory of Australia, is on Timor Sea. From the beach at Darwin we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4, Scotland.

It is a reddish brown medium grained sand which consists of quartz (smoky, colorless, brownish, reddish) red hematite, brown limonite, black magnetite (much of it has a rusty brown color), with mica schist (red, gray), a little white limestone and white sea shells.

"Collected by Mr. G. L. Moon, % Pine Creek, P. O., N. T., Australia." — note on label.

River Sand from Near Karlsruhe, Germany

Karlsruhe, one of the large cities of Baden, Germany, is a few miles east of the River Rhine. From a beach on the river, near Karlsruhe, we have a sand sample that was collected for us by Werner Lieber, Hubbschstr. 24, Karlsruhe, U. S. Zone, Germany.

This is a fine grained reddish sand consisting chiefly of quartz (reddish, colorless, smoky, white) with feldspar (pinkish, white) and small amounts of silvery muscovite and black magnetite.

Glass Sand from New Zealand

One of the pleasures of issuing ROCKS AND MINERALS is the loyalty and generosity of its many readers and subscribers. Recently we received 52 different sand samples (most of them from islands in the Pacific) that were sent us by Miss Winifred H. Arnold, 2020 Magnolia Ave., Long Beach 6, Calif. Among the sands was a sample of glass sand from Parengarenga Beach, North Island, New Zealand.

"This beach is on the east coast of the northern tip of the North Island, and is considered to be one of the finest deposits of silica sand in the world. The sand is brought down in scows, then loaded onto a train and taken to the New Zealand Glass Works near Auckland. We visited the factory and I took this sample off one of the trucks driving into the factory. I checked in the office and was told that the sand all comes from this beach."—letter dater Feb. 1, 1954, from Miss Arnold who had recently toured New Zealand and other islands in the Pacific.

This is a fine grained gray sand and consists entirely of pure quartz (colorless to milky).

Beach Sand from Suva, Fiji Islands

Suva, on the southeastern coast of Viti Levu Island, is the capital of the Fiji Islands. From Savu Savu Beach in Suva we have a sand sample that was sent us by Miss Winifred Arnold (see above).

This is a dark gray sand. It consists of dark gray basalt, dull black magnetite, a few red garnets, and lots of gray sea shells and gray corals. Some of the shells fluoresce yellow under long wave light.

"I have been to Fiji twice, once by ship, and once by plane. The population is European, the Fijians, and a great many East Indians. The foliage is similar to Hawaii, breadfruit trees, some pineapple, papaias, sugar cane, and tropical flowers and palm trees. There are a great many islands in the Fiji group. The sun had just set as we took off in the Stratocruiser, but as we gained altitude we could see the sunset colors on the huge mountains of clouds in every direction. It was a beautiful sight!

"This sand was given to me, as I had no opportunity to visit a beach while there."—letter dated Feb. 1, 1954, from Miss Arnold.

Lake Sand from Lake Chapala, Mexico

Lake Chapala is Mexico's largest lake. It is 70 miles long and 20 miles wide in a beautiful lake region on the boundary line between the states of Jalisco and Michoacan; the depth of the lake ranges from 9 to 18 feet. On the north shore of the lake is the town of Chapala (in Jalisco) and here is a beach from which we have a sand sample that was sent us by Alberto E. Maas, Alamos, Sonora, Mexico.

This is a dark gray coarse sand. It consists chiefly of quartz (smoky, red chalcedony, brown, also red jasper) and dark gray basalt. A tiny amount of black magnetite also present. A mineral which occurs in considerable amount is colorless, glassy transparent feldspar (sanidine) many grains of which show a bluish opalescence.

Shell Sand from St. Thomas Island, West Indies

St. Thomas, one of the Virgin Islands (U. S. possessions in the West Indies) is 43 miles east of Puerto Rico and has an area of 32 sq. miles. From the beach at Red Hook, on the eastern coast of the island, we have a sand sample that was collected for us by David A. Burgess, Box 6667, Loiza Street Station, Santurce, Puerto Rico.

This is a very coarse gray sand. It consists almost entirely of sea shells and coral rock (white, gray, brown, pink) with a few fragments of dark gray smoky quartz.

Beach Sand from S. Queensferry, Scotland

South Queensferry, on the southern bank of the Firth of Forth, lies at the southern end of the Forth Bridge in West Lothian County of Scotland. From the beach here we have a sand sample that was collected for us by Sandy Ramsay,

1015 Aikenhead Road, Kings Park, Glasgow, S4, Scotland. (See his article in this issue on "Collecting agates in Scotland").

This is a medium grained dark gray sand. It consists chiefly of quartz (colorless, smoky) with some pinkish feldspar, rusty black and brown magnetite and a tiny amount of pinkish garnet. A considerable amount of sea shells (white, brown), black coal, black cinders, and even a piece of greenish glass are present.

"Beach sand from South Queensferry. Collected just underneath the Forth Bridge, the Eighth 'Wonder of the World' when it was built. The U. S. battleship Iowa was anchored not far away."—on label.

Olivine Sand from Canet de Adri, Spain

This is a medium grained dark greenish sand. It consists chiefly of olivine (light to dark green, gemmy) and gemmy brownish picotite with a tiny amount of black magnetite. Donated by Juan Montal, Plaza Sagrado Corazon 1, Villafranca del Panades, Spain.

"I am sending you a little sample of olivine and picotite sand which I collected on my last trip (Jan. 24, 1954) to Canet de Adri, Province of Gerona, Spain. Most of the sand is olivine. I have about 2 kilos (5 lbs.) of this sand and I would like to sell it, or exchange it, for American minerals. I prefer to sell it.

"Canet de Adri is a small village near Gerona City. The sand is found in a small stream flowing through the village."—letter from Mr. Montal dated Jan. 29, 1954.

Mineral Industry Map of Ohio

The Ohio Division of Geological Survey, Department of Natural Resources, Columbus 10, Ohio, announces publication of the new MINERAL INDUSTRY MAP OF OHIO: Revised edition, 1953. Scale, one inch equals approximately eight miles. Base shows Ohio Coordinate System. Free distribution.

The Mineral Industry Map of Ohio, first published in 1946, has been revised and reissued. The map, measuring approximately 34" by 36", shows by means of appropriate symbols and state mine numbers the locations of all important mines and quarries in the following mineral industries: coal, limestone or dolomite, salt, gypsum, portland cement, sandstone, sand and gravel, and shale or clay. The map does not include oil and gas fields.

Numbers opposite symbols on the map are operation numbers assigned by the Ohio Division of Mines. With the operation number and county name, ownership of any operation may be determined by reference to numerical directories in the Annual Coal and Non-Metallic Mineral Report for 1952, which accompanies the map. Reference from the directories to the map will be facilitated by the use of the state coordinate locations which are also recorded in the numerical directories.

The map is being distributed free of charge together with the annual statistical report prepared by the Division of Labor, Statistics and the Division of Mines of the Department of Industrial Relations. This report contains data on production and employment in addition to the numerical directories of operators which are keyed to the map.

Newspaper Features North Carolina Minerals

The Dec. 24, 1953, issue of *The Tri-County News* (Spruce Pine, N. C.—S. T. Henry, Editor) devoted many pages to the minerals of Mitchell County, N. C., whose most famous mineral locality is Spruce Pine—noted for its feldspar, mica and kaolin deposits.

Since 1917, North Carolina has produced more feldspar and mica, than any other state, and its output of sheet mica has amounted to 90 percent of the Nation's total.

Each year the mines in and around Spruce Pine draw collectors from all over the nation who always go away loaded down with choice specimens.

THE TRI-COUNTY NEWS is an 80-page newspaper, issued every Thursday, and its subscription price is $2 a year. Issued in a mineral collector's paradise, the paper often features items of interest to mineral collectors.

Goudey Issues Micromount Catalog

What is believed to be the largest and most complete micromount catalog ever issued, made its appearance recently when Hatfield Goudey, Gabbs, Nevada, brought out his 1954 Micromount Catalog. This is an 8½x11 inches 10-page publication of which 5 pages are devoted to unmounted and mounted micromounts which are listed alphabetically with localities.

The contents are as follows: Micromounts—Why and how (p.1); Mounting technique (pps. 2-3); General information (p. 4); Micromount specimens (pps. 5-9); Supplies (p. 10).

Micromount enthusiasts, here is your catalog! Send for your copy today. It is free!

MINERAL SHOPPER'S GUIDE

Conducted by CHARLES A. THOMAS
706 Church Street, Royersford, Pa.

Advertisers are invited to send notes or samples of their products. This service is free.

Some weeks ago we were surprised with a neat package from the Seven Brothers, whose ads are appearing in the current issues of Rocks and Minerals. A very lovely silver bracelet, set with a polished square stone of scenic agate . . . a fine example of their silver jewelry work . . . a packet of peridot, samples of baroque turquoise in lovely blue, and two sets of small but interesting Tiger Mine specimens made up the rest, Later, the Seven Brothers sent us a slab of exquisitely patterned chrysocolla-chalcedony as a sample material to be offered to the lapidary trade. We immediately sent an order to the Seven Brothers for more of this beautiful blue and clear and pitless material. Only five hundred square inches of this fine material is in stock, so write for prices. Other prices are printed in the current ads.

We have had many queries in the past asking about used binocular 'scopes, so much in demand by the micro-hobbyists. Why worry about a used sterioscopic when you can now get, from Edmund Scientific Corporation, a brand new double-barreled, erect position, and up to X45 power for a lot less than a used instrument might cost? And, if you need special optical accessories, the Edmund catalog will certainly show the way . . . at low prices. Unless one is extremely lucky, used sterioscopic microscopes will run from $90.00 and up. The new Edmund is only $85.00.

Ward's of Rochester sent us (we believe, without knowing that it was for the M.S.G.) a very splendid slab of labradorite and several pads of printed field labels, ordered by Mrs. Thomas and daughter, Nancy. This is just another proof that mail-orders can be and usually are well handled by top grade dealers.

Examining new roadcuts is fun, but please do not do this while driving. To "stop and look" is better. Ghost writers are real, ghost readers are quite dead.

J. Williams, a regular classified advertiser, offers excess but good material for the novice and for payment of the parcel post charges. Up to four pounds of such things as dumortierite, Crestmore blue calcite, perhaps some tourmaline from Mesa Grande, jaspers and other interesting specimens, even fossils, may be in the pack .If there are too many requests, Mr. Williams asks the novice to be patient . . . he will do his best. He sent us some excellent samples of the specimens mentioned above.

Brazilian stones are always of great interest to collectors and lapidary hobbyists. The Virginia Trading Company, 24 State Street, N.Y. 4, N.Y., are offering cut stones from .40 per carat up, starting with citrine at the .40 figure. Interested? They have uncut stones, too. Write them.

Mrs. Sigrid Anderson, of Ramblin' Ranch, Campton, N.H., in the White Mountains, writes that she and her son are kept busy mailing mineral sets which they make up mostly from specimens collected on their own 400 acres. The sets are mailed where ever Rocks and Minerals Magazine is read and that means such places as Japan, Africa and the world over. One good turn deserves another. We note that there is a printed line at the foot of their letter paper which reads, "Member, the Rocks and Minerals Association." Mineral sets are swelligant for young collectors. Write for information. The set we received is very nice . . . even has an analysis and descriptive folder which is especially informative for beginners.

Minerals with odd sounding names may or may not be the rarer ones (the fine print minerals in Dana), but we would like to point out that they usually are. Take Destinezite as a f'rinstance, or Duftite, Gearksutite, Hiordahlite, Parsonite, Senarmontite, Slavikite and many others. J.C. Filer and Son's new 1954 mineral

catalog lists many of these and more and it will not cost a fortune to get them. Prices range from .25 to around $5.00, a wide range. They are world minerals from all over.

H. Poncer, whose address is now Buen Tono #397, Colonia Industrial, Mexico D.F., Mexico, sent us some very nice apatite crystals (Durango), Precious Topaz, Amethyst and Golden Feldspar. We have worked up all but the Topaz which we are saving for later efforts. The material is very good, and now it can be told. Poncer's ad appeared on page 634, the Nov.-Dec. issue.

We are pleased to welcome a new advertiser and a brand new firm into the fold, the Natural Gem and Mineral Company of Attleboro, Massachusetts, whose services will be welcomed by many. Cutting, sawing, polishing, jewelry setting, minerals, gems, mountings, abrasives, preforms, blanks, crystals and not the least, introductory low prices and a friendly invitation is extended to all fellow collectors to visit and look around at their establishment and stock. Clear quartz for spheres, corundum crystals from Africa, black onyx, and many other items are listed in their current ad. Samples of the above minerals were sent to us for first-hand examination and we are pleased to report that these samples are really fine. Good luck to this new firm, which is located in the heart of the jewelry industry.

Amethyst and Smoky Quartz will always be loved by the gem collector and the general collector. Fine varieties are imported from foreign lands. However, there are a few fine localities in the U.S. from which gem suppliers obtain their material. We have seen royal colors in Amethyst from New Jersey and other states, fine crystals of Smoky Quartz as well, and in many tones of color and clarity. We hear that the old Pondorff locality in Butte, Montana, may be reworked for both minerals if enough interest is in evidence. Gem and mineral suppliers are invited to contact the Wilson Brothers of Butte. Such contacts may help to determine the feasibility of reopening this old locality.

Newspaper reports give glowing accounts of big zinc doings in the vicinity of Colville, Washington, and north to Canada. Anyone see any nice specimens from these prospects?

See W.S. Kettering's ad in this issue. He sent us some very nice samples of the minerals advertised. Mr. Kettering has been a dealer for fifteen years and should know his minerals and the quality thereof. The Kettering minerals originate from the Pikes Peak pegmatite areas, a region of intense interest to collectors which has been written up many times in Rocks and Minerals Magazine. There is a set of well selected radioactive specimens and a beautiful sample of flowering rose agate from Colorado. We have yet to see a prettier sample of Colorado flowering rose agate and the radioactive specimens will find a place in our own display reserved for radioactive rarities.

Technicraft's new 1954 catalog is a whipperdoo for the gem cutters. With each mention of gem rough which is in stock, there is information on final polish proceedures. A new type of printing makes it easy to read. Technicraft's full page ad appears in this issue.

Ever go to a museum and come away wishing you had specimens like the ones you just admired? You can, you know, if you skip over the traces once in awhile and order specimens from a reliable dealer. Two letters came the same day, telling us how much the writers enjoyed specimens brought from dealers mentioned in this department. It makes us feel good all over. Miss Helen MacLeod, Washington, D.C., and David A. Burgess, Puerto Rico, both praised dealers who advertise in Rocks and Minerals Magazine. Mr. Burgess sent us three very nice calcite specimens from Puerto Rico, the most interesting being the calcite pseudo after coral. This material is very attractive on a display shelf.

We note that an old friend is offering Marcasite crystals with Calcite which come from Racine, Wisconsin. Robert Rich has them from one half inch to over four inches, thumbnail and cabinet size at from .25 to $5.00. See his ad in this number of our R & M. Not too many

localieies offer good Marcasite. The Racine locality is a good one.

Diabase sills continue for a great many miles in mountain systems. It has come to our attention, through Will Shulman, that our own apophyllite, which we collected at Dyer Quarry, Monocacy, about ten years ago, is identical with some specimens from the Fairfax County, Virginia locality. The Virginia and the Monocacy, Pennsylvania localities are over one hundred miles apart. It would be interesting to know if the snow white stilbite is also in evidence at the Virginia locality. We do not know. It is plentiful at Monocacy . . . at times. Will sent us two micros of elongated pyrite on prehnite and a micro of crystallized silver from Silver Islet, Ontario.

Elongated pyrites may be suspected as being impure with possible arsenides. From Monocacy, Penna., the long cubes are grayish bronze and are associated with erythrite in rare instances. These pyrites have not been determined as safflorite. Those from Wheatley, elongated and flat cubes, (near Williams Corners, Penna.) have a similar color, and which Mr. Desautels suspects might be lollingite. The extremely elongated cubes from Perkiomenville, Penna., are brilliant brassy pyrites which the late Sam Gordon identified as pyrite. In any case, the term pyrite should suffice until definite determination is made.

Mispronouncing the mineral name chalcotrichite is excusable and no matter how one says it, it is still a beauty. Microscopists see it the best. What beautifully red, clear, clean, sharp needles! We have but one or two micromounts of this exquisite mineral and brother you would have to break our right arm to get one. This may be a hint, too, those who have been shying away from ever getting interested in the tiny but perfect presentations of superb specimens. Anyone can have a superb collection of micromounts and at little cost but not everyone can have a superb cabinet size collection.

A newspaper item stated that there are great potentials of columbite at Magnet Cove, and that the Government has been so advised, yet nothing has been done about recovery of this vastly strategic mineral. We have heard of this type of lament many times concerning other overlooked potentials.

Copper mines are sources of a great variety of minerals. Not the least and unusual is the way in which wood absorbs copper to become heavy with the mineral. A few years ago we received a section of charred wood from a burned-out copper mine and imbedded in the wood were bright crystals of copper. J.E. Byron was thanked for this interesting "specimen".

Rarely does a month pass that we do not get a letter and something of interest in the way of minerals from Frank Waskey. This time, we received two very attractive calcite crystal groups from Alaska which appear to be pseudomorphic after glauberite although one group, very pretty, looks as though the calcite replaced marcasite. Those who are interested in excellent clusters of calcite, pseudomorphic after other mineral crystals, should send an order to Frank Waskey who is doing a fine job of bringing Alaska into our collections. Frank has read our mention that we wondered at the strength of mammal teeth which have survived eons of time while our own chewers are not lasting three score and ten . . . so he sent us a perfect fossil which he states comes from the Aurochs or a similar creature of the arctic called a Bos, the ancestors of certain European cattle. The fossil tooth was found in the extreme N.W. Seward Peninsula, Alaska. Aurochs disappeared in 1627.

Man is not the only creature to offer baubels to his ladylove. The Penguin places a pebble at the feet of another . . horrors, to find out if it IS his ladylove. If she picks it up, she is his, if not, he isn't . . . wrong gender.

Masses of honey colored and brownish translucent sphalerite may be more attractive on a display shelf than a sprinkling of dark, though perfect crystals on quartz. Such attractive specimens have been found in Pennsylvania at Audubon.

Ford Wilson wrote in again. He is going in high gear in catching up on good micros. He reports a great number of good ones shipped from Ward's, some

personally selected at Minerals Unlimited, Burmincos, Adobe Crafters and Oliver Mason. Mr. Wilson certainly got around on that trip. Up to Oregon and California, Utah and back to New Mexico, with loot from all places, including some extra fine zeolites from Eleanor Gordon's famous Oregon collection in Salem. Wish we had the space to print the list of new acquisitions.

Ivory is thermoluminescent. Careful heating is required to keep it from scorching.

Obituary Notices

Lawson H. Bauer

FRANKLIN, N. J. — Lawson H. Bauer of Evens Street, chief chemist and mineralogist of the New Jersey Zinc Co. here, died yesterday in Franklin Hospital after a short illness. He was 65.

Mr. Bauer had been employed in the firm's chemical division for 41 years. He was named chief chemist in 1951, succeeding the late David Jenkins, a former mayor of Franklin.

Mr. Bauer was considered an authority on Franklin area minerals and deposits. He wrote several papers on the subject for trade journals.

WAS BOARD OF HEALTH HEAD

He was president of the Franklin Board of Health, a member of the Board of Education from 1937 to 1943, a fellow of the Mineralogical Society of America, and a member of Huguenot Lodge, No. 377 F. & A. M. of Mertztown, Pa., and the Lutheran Church here.

He was graduated from Lafayette College in 1911 where he was a member of Phi Beta Kappa. Born in Mertztown, he had lived in Franklin 41 years.

He leaves two sons, John H. of Parlin and Charles L. of Washington; two daughters, the Misses Elizabeth Bauer of New York and Nancy C. Bauer, a senior at Mt. Holyoke College, and a sister, Mrs. Caroline Kappenberger of Mertztown.

Services will be conducted tomorrow at 2 P. M. at the Ramsey Funeral Home, 1 Main Street, by Rev. Robert Strain, pastor of the First Presbyterian Church. Burial will be in North Hardyston Cemetery.

Newark News
Newark, N. J.
(Thurs. Jan. 28, 1954)

EDGAR H. SARLES DIES

Edgar H. Sarles, one of Ohio's most noted mineral collectors, died at his home in Norwood, Ohio, on Wed. Jan. 13, 1954, after a six month's illness with a progressive muscular ailment. We hope to print his obituary in our next issue.

J. J. HAYES KILLED IN AUTO CRASH

Prof. Junius J. Hayes, of Salt Lake City, Utah, one of America's most noted figures in mineralogical circles, was killed in an auto accident, on Feb. 27, 1954, so we have been informed by A. F. Flagg of Phoenix, Ariz. Prof. Hayes was President of the Min. Soc. of Utah several years, a past president of the Rocky Mountain Federation, past President of the American Federation, and a member since 1932 of the Rocks and Minerals Association.

J. T. WALDEN

J. T. Walden, one of North Carolina's most noted mineral collectors, died Jan. 4 (?), 1954, we have been informed by L. H. McMurray, Box 954, Rock Hill, S. C. In his letter, dated Jan. 10, 1954, Mr. McMurray writes:

"I am enclosing a clipping about our old friend Mr. J. T. Walden's death. It appears that he was on one of his gem hunting trips, when The Master picked him for the gem collection in heaven. I believe he would have wanted it this way. He will be missed by many collectors all over the country."

The clipping is as follows:

JEE THOMAS WALDEN

STATESVILLE, N. C. Jan. 5 — Jee Thomas Walden, 74, retired carpenter of Stockton Street was found dead late this afternoon in a railroad side ditch about a mile and a half east of the Southern station here. Coroner Marvin Raymer, Sheriff Charlie Rumple, Deputy Sheriff Sam Laws and Captain H. P. Lackey of the Statesville Police Department, made an investigation. The officers found that Walden has apparently been dead at least 24 hours. There were no marks of violence and he had $45 in cash in his pocket. Death was attributed to a heart attack, which Mr. Walden apparently suffered while walking along the railway tracks. No inquest was held. Three sons survive. Funeral plans were incomplete tonight.

THE AMATEUR LAPIDARY

Conducted by COMMANDER JOHN SINKANKAS
Certified Gemologist, American Gem Society
1107 S. Oakcrest Road, Arlington, Va.
Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all.

Many minerals appear excellent in the rough state yet after considerable time and effort has been spent on them they prove disappointing. How can the amateur estimate the suitability of rough? How can he be fairly certain that *this* piece will cut well and *that* will not?

Let us take agates and jaspers, possibly our most common roughs and also commonly disappointing. Agates displaying a noticeable degree of translucency are generally compactly constructed and if they do not contain pits or pores, will be almost certain to polish. Yet this is only true for those which lack definite inclusions while those with mossy growths and other obvious impurities have to be judged on their own merits in each case. Inclusions are distinguished here from stains or natural dyes, best exemplified in the first case by moss agate such as from Texas and in the second by Montana agates in which the browns, reds, and blacks are caused by an infilitration of a foreign mineral *without however disturbing the original agate structure in the least*. Moss agates consequently may polish well or undercut badly at the points where the inclusions reach the surface while Montanas will almost invariably polish superbly.

In the rough an excellent indication of suitability is to examine a clean fresh fracture surface while dry. If the character of the surface is uniform without small bumps or pits and the lustre is even all over, it indicates that little or no trouble from undercutting will result. If on the other hand there are definite irregularities in smoothness or differences in lustre varying from dull to smooth to glassy,—beware, this specimen is almost certain to be troublesome. If any spots show an earthy lustre such as that presented by a broken piece of blackboard chalk, this area is certain to be unpolishable either in agates or jaspers.

The same surface is now wetted either with the tongue or with a sponge,—and not too much water if you please! Hold the surface up to the light to catch a strong reflection from it. If any areas dry out quickly it shows them to be highly porous and therefore earthy. These will not polish.

Another bugaboo with agates and jaspers is that caused by layers or centers of crystalline quartz easily visible to the naked eye. These are commonly found in many agates among them Texas and Lake Superior types. The strong contrast in working characteristics between side by side layers of quartz and agate makes grinding, sanding, and polishing difficult to do well. In practice it will be found that the quartz, being far more brittle than the agate, ends to erode rapidly and pit deeply. This calls for much sanding to get rid of the pits and if not done conscientiously, the final polish will trap powder and disfigure the stone. Fast and rapid sanding on a new cloth will most often remove these pits without allowing undercutting to occur. Do not try to take out the pits in polishing because this merely results in deepening of the quartzy areas and causes a lemon-peel finish.

USE OF LIQUIDS FOR JUDGING SLABS

The use of varnishes on slabs to emphasize their beauty by filling in saw marks is a well-known technique. Water also works well but another liquid is even better because its refractive index is almost exactly that of agate.—Anise Oil. This aromatic oil is much used in cookery and sold in almost every drugstore; it smooths out the surface irregularities of a sawn

(*Continued on Page* 178)

CALLING ALL ROCKHOUNDS!

There comes a time . . . . . .

In the September issue of, THE MINERALOGIST, there appeared a poem entitled, "Rockologist vs. Rockhound". Other articles, in like vein, have found their way into our mineral magazines, during the past year. Each time I read one of those attacks on the term "Rockhound," I was shocked that anyone would take, seriously, a word, which, harmless in itself, stands for so much of outdoor pleasure and recreation for thousands of folks.

Each time, I resolved to write a rebuttle but life has a way of smothering us under mounds of "daily duties" and it is only now, months later, that I am jerked back to this "rock slinging" by a most unpleasant incident.

Recently, the morning's mail brought to me, in reverse, one of the advertising slips on my book, "Rockhounds in the Making", which had gone out to a collector in New Jersey. On the back of the slip he had written this message . . . and it rocked the house of Beymer! "Without knowing anything at all about the contents of your book, I would not touch it, because of that obnoxious word, 'Rockhound'—Many mineral collectors I know feel the same way about this and other terms like, 'Pebble Pups', that cheapen and degrade the pleasures of mineralogy." Unquote.

It is understandable that the term, "Rockhound," might bring a feeling of embarrassment to some neophytes who are not yet steeped in its common usage but to entertain such hatred for the expression that any reading matter bearing that title must be shunned, regardless of its nature, smacks of an intollerance completely foreign to the genial forbearance of gem and mineral collectors, as a whole.

Will the Rockhounds one day live on the wrong side of the tracks while, on the right, dwell the Rockologists? Since it is a sound practice, in matters of controversy, to seek the opinions of disinterested persons, I presented these two words—Rockhound, Rockologist—to several absolute strangers to the rock hobby. I quote the consensus of their analysis.

"Rockhound . . . sounds interesting, unusual. Makes one want to know more about it. I believe this term fits very well the rock hunter whose main interest is the finding of stones which he can turn into objects of beauty either by way of his lapidary equipment, or by the simple process of "washing up" for display in his cabinet. Rockologist, on the other hand, means something more than Rockhound. That title would indicate a collectors first interest to be the geology of the rocks he sought, rather than their intrinsic beauty." End of quote.

Newspaper and magazine Editors—outside the hobby—have always handled the word, "Rockhound", with courtesy and this book of mine, whose title caused such pain to the New Jersey collector, inspired the Editor of one of our city papers to write a full length Sunday Editorial on "Why Rockhounds?" He had perused the book its entire length and his comments on the Rockhound Fraternity made one proud to be, of their number.

Rockologist is indicative of serious thought and intent. Had I used the title, "Rockologists in the Making," it is my opinion, the book would have fallen flat on its face. Since calls have come for it from Libraries, News Agencies, Book stores, Hobbyists—New York to California—I must conclude, it hasn't. Thankfully.

"Rockhound", catches attention, arouses interest and intrigues the imagination!

It is possible that the names, Sod-Buster—Sagebrusher—Hoeman, disturbed some of the early pioneers who, well educated and of finer clay than some of their neighbors felt some stigma in the terms. But the words were harmless and fitted and in time became synonomous with farmer and rancher. What's in a name?

Could be—collectors offended by this expression—are afflicted by what is spoken of as, "self respect". There is a cure for this malady. The name of the cure is, "Humility".

(*Continued on Page* 180)

FOSSIL DEPARTMENT

Conducted by A. ALLEN GRAFFHAM

Box 419, Ardmore, Oklahoma

Along with other letters received in the past eight weeks was a very welcome one from Amel Priest of Peru, Iowa, who sent along a three page manuscript on collecting in the Devonian of Iowa. Mr. Priest is a collector of brachiopods and is especially interested in *Spirifer* and related types. He is also interested in *Composita* and *Athyris*. I also received a box from Mr. Priest containing a number of fine brachiopods from the locality described in the following story. I had intended to have plates made showing a few of the brachiopod types but time did not permit. I hope the readers find the following story as interesting as I did.

COLLECTING FOSSILS AT ROCKFORD, IOWA

by

Amel Priest

Peru, Iowa

At the brick and tile plant south-west of Rockford, Iowa, there is a collector's paradise. Imagine scrambling over the dumps, picking up fossils until you have a three gallon bucket full. Then as you straighten up to let the kinks leave your back and legs, you look about and realize that you haven't made a "dent" in the available fossils. This will give an idea of the abundance of well preserved specimens.

Brachiopods are by far the most common fossil, but corals and bryozoans are numerous. Pelecypods and gastropods are preserved mainly as casts. Over two hundred species and sub-species of fossils of all types have been reported from the Cero Gordo Shale.

The huge dumps are the result of stripping off the Cero Gordo Shale, with its abundant fossils, in order to get down to suitable shale for processing into brick and tile. This lower shale bed, the Juniper Hill Shale, contains few fossils and these are poorly preserved.

Exposures of the Cero Gordo Shale are not numerous. In addition to the tile pit, another good collecting spot is known as Bird Hill. This is located five miles west and one mile south of the tile pits and the Cero Gordo and Floyd County lines. Here the road curves around a hill exposing a large bank of fossiliferous shale. A few species are found here that, I at least, have never found at the tile pits. On the other hand, other species are more numerous and larger in size at the tile pits. The type locality of the Cero Gordo is at Hackberry Grove. This is a high bluff overlooking the Shell Rock River, a few miles upstream and in a north-westerly direction from the tile pits. Other outcrops may be seen in road ditches in the immediate vicinity of the tile pits.

There is some confusion as to names representing these formations. In a book by Carroll Lane Fenton and Mildred Adams Fenton, "The Stratigraphy and Fauna of the Hackberry Stage of the Upper Devonian", the Hackberry stage is set up to include the Owen and Cero Gordo substages. The Iowa Geological Survey gives the stratigraphy as Lime Creek Formation which includes the Owen member, Cero Gordo member, and Juniper Hill member. Regardless of the name adopted, the collecting is good and will continue to be good for years to come.

The Owen member which overlies the Cero Gordo is made up of limestone and shaly limestone. It contains many species of corals and gastropods as well as other types of fossils.

Listed in Fenton's work are 38 distinct species of brachiopods not including subspecies, of which there are many. *Atrypa* is probably the most numerous with five

species and four sub-species. One species of *Atrypa* is listed from the Owen member. *Spirifers* are numerous and varied, with four species and five sub-species represented. In some places *Douvillinas* are so thick that they crunch under foot, after they have weathered free. In several trips to the pits, there are some of the rarer species that I haven't found, and others, of which I have only one or two individuals. The following list of species with notes on abundance, will give prospective collectors an idea of the fauna they might expect to find.

Brachiopods

Crania famelica and *C. liosoma*	occasional
Schizophoria iowaensis	plentiful
Strophеodonta thomasi	occasional
Douvillina arcauata	very plentiful
Douvillina maxima and *D. delicata*	plentiful
Schuchertella prava	occasional
Leptostrophia canace, L. rockfordensis and *L. camerata*	plentiful
Strohponella reveras, S. Obesa and *S. hybrida*	plentiful
Pugnoides calvini	(have never found one)
Camarotoechia saxatilis	(found only one)
Cranaenella navicella	occasional
Cranaenella calvini	(found only one)
Gypidula cornata	(have never found one)
Productella walcotti	occasional
Atrypa owensis (from Owen Member)	(have never found one)
Atrypa hackberryensis	occasional
Atrypa devoniana and *A. rockfordensis*	very plentiful
Atrypa planosulcata	occasional
Atrypa subhannibalensis	rare
Leiorhynchus iris	rare
Theodosia hunderfordi	plentiful
Crytospirifer whitneyi	plentiful
Spirifer orestes	plentiful
Platyrachella cyrtinaformis	occasional
Platyrachella alta, P. pulchra	rare
Platyrachella macbridei	occasional (found one good one)
Cyrtina iowaensis	occasional
Reticularia inconsueta	(have never found one)
Spirifer robustus and *S. rarus*	(have never found either)

Of the corals of compound type the *pachyphyllum* varieties are most numerous. *Acervularia* and *Strombodes* are also found. There are over a dozen different types of horn coral, but since they must be sliced and studied with care for determination, I have not become interested in them. These corals are especially numerous at Bird Hill.

Numerous bryozoans can be found and several species are represented. The most interesting type fastens itself to the shell of a brachiopod or other organism. Occasionally a specimen wil be found that is almost entirely covered with hollow tube-like zoarium.

Crinoids are represented by stem sections. Fucoids and Stromatoporoids may also be found.

Any fossil lovers passing through Iowa can spend some enjoyable moments collecting at the tile plant or at the nearby localities. Collectors are welcome.

Every day or two we hear of a locality that is no longer open to collectors because someone was careless. Be careful of what you do on other people's property. Leave no trash! Start no fires! Close all gates! Ask permission! Of course there is always the case of the local vandal doing the damage and the collector getting the blame. There is little one can do about this situation. However, every collector must use care to see that it is not his act that closes the locality to everyone. I know of one locality that has been closed for years because one collector left a pile of newspapers to blow over the field. One of the newspapers blew in front of a team of mules which were hitched to a binder and the results were very disastrous. One could hardly blame the farmer for being furious. As I remember the binder was completely wrecked and one of the mules died as a result of injuries received in the runaway and wreck.

Collecting will be very good in Oklahoma and Texas with the first spring rains. The ground is loosened to a depth of two to three inches by freezing and thawing and when this material washes off with the first hard rains, the crop of fossils should be very good.

Club and Society Notes

Attention Secretaries—Please submit neat copies. Give dates and places of meetings. Check names for correct spelling.

East

The Mineralogical Society of Pennsylvania

On Sunday, January 10th, 1954, 50 members of the Mineralogical Society of Pennsylvania accepted the invitation of the lapidary section to attend their first meeting in the State of Delaware.

Our hosts were Doctors Douglas and Ellen Davidson of Claymont.

First we enjoyed a guided tour through our hostess' lapidary work shop where she artistically polishes cabachons and free forms which she exhibits on 8½" x 11" carboard mounts or makes into most beautiful gold and silver jewelry.

We were very much impressed with the two cases of hand wrought originally designed gold and silver mounted jewelry from Mrs. Davidson's jeweler's bench.

Particularly impressive was a 2" specimen of crystalline gold embedded in white quartz entwined in heavy forged golden coils. Chrysocolla, malachite, variscite, lapis, aquamarine and tourmaline rings, brooches and bracelets made a scintillating display.

For the formal part of the meeting the group went across the street to the Red Man's Hall where chairman, Russell Bell together with the group further developed plans for M.S.P.'s second mineralogical symposium to be held March 14th, at the Merion Tribute House at Merion, Pennsylvania, featuring specimens collected by members through out the year.

Following the business meeting we were treated to a showing of 100 Kodachrome slides, covering 20 localities where we had collected. These beautiful pictures were organized by our host and solicited by him from the following members: J. David Dear, Paul Seel, Leonard Morgan, F. Roy Lord, William A. Morgan, Harry E. Ranck, Howard Ennis, Will Shulman and Dr. Douglas T. Davidson. Paul Seel ably acted as projectionist.

We enjoyed seeing our friends and the localities we pleasurably worked so hard in, but the nostalgic feeling was dispersed by an inspired enthusiastic urge to get out on trips again when the weather was more clement.

We returned to the house for crackers and cheese, cookies and coffee and warmed by friendship and refreshment departed in the beginning of an 8" snow storm.

Progress and Accomplishments

Jr. member, Bevan French of Nutley, New Jersey was selected as one of two finalists, in the Westinghouse Science Talent Search, for the State of New Jersey.

He is one of 40 chosen from 16,000 over the nation and is going to Washington D. C., for further competition.

His thesis was titled, *Present Day Mineral Collecting at Franklin, New Jersey* and was illustrated with color photos of fluorescent minerals.

Gerry & Will Shulman,
Co-Chairmen,
Publicity Committee,
113 Huntington Ter.,
Newark 8, New Jersey

New York Mineralogical Club, Inc.

The December meeting and social was held at Philosophy Hall, Columbia University, New York City, on December 16, 1953.

Dr. Stenbuck, President, returned from his vacation in Mexico, presided, and called the meeting to order at 8 P. M.

The membership committee read the names of Mr. Lapham, Dr. Mason, Mr. Pesold, Mr. Reed, Mr. Seaman, Mr. Herzfeld, Miss James, for the second time.

Mrs. G. D. Wiebe was unanimously voted a member.

The Field Trip committee reported progress. The Treasurer being absent, his report was not available.

Mr. Taylor proposed that the Dr. Kunz Fund for an educational program be put to work. Dr. Stenbuck asked for written suggestions to be submitted to the Secretary who would place them for consideration to the President and the Board of Directors: subsequently to be made the principle subject of business at some future meeting.

Mr. Lisle brought a guest, Mr. Meyer Berger, Columnist for the NEW YORK TIMES, who made observations of our club activities to be subject of an article to appear in the near future.

There being no further new or unfinished business the program followed.

Mr. Henry J. Hasenfeld, one of our members, gave a lecture on the art of diamond cutting. He dealt with source of raw material, mining processes, selection of gem and industrial grades and the various stages of cleaving or sawing roughing and the polishing of faceted gem stones.

A motion picture was shown of the cutting processes, followed by an actively participated question and answer period.

The generous applause of the members indicated Mr. Hasenfeld's talk and motion picture was much appreciated.

All business being completed the meeting was adjourned and the members joined in a merry social. There were toothsome tidbits with tea around the samovar and the far corner was the Mecca for the followers of good old Father Knickerbocker.

Victor Pribil
Secretary
47-18 37th Street
Long Island City 1, New York

North Jersey Mineralogical Society

The mysterious and fascinating visitors from outer space which fall on Earth from time to time and are known as meteorites, were the subject of an informative talk presented at the February meeting of the North Jersey Mineralogical Society.

The meeting was held in Paterson Museum and the speaker was William C. Casperson, Museum Curator.

Mr. Casperson told the Society that the 1953 meeting of the American Association for the Advancement of Science at Boston in December, which he attended, devoted an entire day and evening to meteorites, and still left many questions unanswered. His talk was in part a report on this meeting and in part a presentation of data from other sources.

While the subject has always been and still must be speculative as to the origin, time of occurrence and behavior of meteorites on their way through space, many facts about them are well established.

No element has ever been found in a meteorite which is not also present in the Earth. Of the 92 known elements in the Earth, 31 have been discovered in meteorites. "This", said Mr. Casperson, "gives a rather comforting indication of community of interest and possible common origin for all cosmic bodies."

All meteorites which have been studied fall into three, and only three classes: (1) metallic, consisting of iron and nickel and exhibiting in polished cross section the characteristic geometric patterns known as widmanstatten figures; (2) stony, consisting of silicate material and olivine without widmanstatten figures; (3) stony-iron, an intermediate type with characteristically patterned nickel-iron often filling the tiny spaces between the stony particles.

These similarities, Mr. Casperson said, point strongly to a common source of origin for all types. He explained one theory which argues that meteorites are asteroids, the residue either of some body which exploded internally, or of a collision between two bodies, in space. Astronomers recognize a group of hundreds of asteroids, some large enough to have been given names, occupying a place in the solar system between Mars and Jupiter. Holders of the asteroidal theory believe the meteorites which fall on the Earth are fragments from this large group.

One more established fact about meteorites is their unreliability. Nobody knows when one will arrive, where it will strike, how big it will be. Meteorites apparently wander through space at random, Mr. Casperson said, in a manner totally different from planets, stars, meteor showers, even comets, all of which can be mapped and accurately predicted as to time and place of appearance.

He said that a summary of recorded meteorites throughout the Earth now must total about 1500 individual interspatial visitors. Meteorites have been recorded from 41 of the United States in varying numbers, from one in New Jersey to 91 in Texas. North America accounts for about 690 of the world total.

The smallest one recorded, weighing five grams, is in the Vienna Museum, and the largest, weighing 37½ tons, is in the American Museum of Natural History in New York. This one was found at Cape York, Greenland, and was brought to this country by Admiral Peary returning from one of his polar trips.

Thermodynamic calculations, Mr. Casperson said, estimate that any meteorite entering the Earth's atmosphere would have to weigh at least ten pounds to survive; otherwise it would be burned up in transit, and this is evidently what happens to most "shooting stars."

The Society's new president Wilfred Welsh, announced personnel of the following standing committees: Program, field trips, membership, publicity, nominating, welfare, library, audit, convention exhibits, monthly mineral display, social.

The 15-minute mineral study period was conducted by Charles Franz who exhibited fluorite in several types and colors, discussed its characteristics and told of collecting trips he had made to fluorite localities.

Hans Engel will conduct this feature at the March meeting.

Marian Brown Casperson
Publicity Chairman
9-11 Hamilton Street
Paterson, N. J.

Newark Mineralogical Society

Thirty-five members of the Newark Mineralogical Society journeyed to Paterson, N.J., on February 16th, 1954, where they spent the afternoon viewing the magnificent mineral collection at the Paterson Museum. The museum has made a specialty of New Jersey minerals,—some of which have been found nowhere else in the world,—and one feature of the afternoon was a brief talk by the museum's curator, William C. Casperson, who dis-

cussed the origins of these minerals and their locations.

The beautiful zeolites and their associated minerals filled four double cases. Many of them came from Paterson quarries several years ago when excellent specimens were found in abundance. The collection of Franklin, N.J., zinc minerals is next in size, and it too contains rare specimens not found today. The museum also has a fine representation of minerals from all over the world as well as specialized collections devoted to ores, industry, radioactivity and fluorescence.

After thanking Mr. Casperson and his staff for their cordial helpfulness, the Society left Paterson feeling that this little museum is a mineralogical treasure house which should not be missed by anyone passing that way.

Mineralogical Society of the District of Columbia

The regular meeting of the Mineralogical Society of the District of Columbia was held on Fri. Jan. 15, 1954 in room 43 of the U. S. National Museum.

The meeting was called to order at 8:25 p.m. by President John J. Livingston.

The minutes of the previous meeting were read and approved as read.

The Secretary-Treasurer's annual report was read. It was moved and seconded that this report be accepted. The motion was carried.

Mrs. Blore reported for the dinner committee.

A refund from the sale of Dr. Pough's book had been received from the publishers. A motion was made and seconded that the share of the Mineralogical Society members be added to the Society's treasury. The motion was carried.

It was moved and seconded that an additional display case be purchased from the Eastern Federation at a cost of $35.00. The motion was carried. The Secretary-Treasurer was instructed to make arrangements to purchase this case from the Eastern Federation at the quoted price.

Mr. Ben J. Chromy announced that the 1954 convention of the Eastern Federation will be held at the Municipal Auditorium in Miami, Florida, on October 14, 15, 16, 1954. The Biscayne Terrace Hotel will accept reservations of people wishing rooms near the Auditorium. A gold cup will be the first prize this year.

Communications were read.

Mr. Ben J. Chromy exhibited a booklet on "Virginia Mineral Localities" by Richard V. Dietrich.

Complying with President J. J. Livingston's request that the nominating committee place another name on the slate for President, the committee nominated Mr. Antonio C. Bonnano. Nominations from the floor were now in order and the Secretary-Treasurer read a letter from Mr. William B. Haliday nominating Col. J. J. Livingston for President. There being no further nominations for President, after a written ballot, the tellers' announcement was as follows: For President, Col. J. J. Livingston—29 votes; Mr. A. C. Bonanno—14 votes; Total of 43 votes cast.

There being no further nominations for Vice-President, Mrs. Lowry moved that the Assistant Secretary be directed to cast a unanimous ballot electing Mr. Paul J. Rees to the office of Vice-President. This was seconded and unanimously passed.

There being no further nominations for Secretary-Treasurer, Mrs. Lowry moved that the Secretary be directed to cast a unanimous ballot for Mrs. Frances Madison as Secretary-Treasurer. This was seconded and unanimously approved.

There being no further nominations for Assistant Secretary-Treasurer, Mrs. Lowry moved that the Secretary be directed to cast a unanimous ballot for Mrs. Mary Broderick as Assistant Secretary-Treasurer. This was seconded and unanimously approved.

There being no further nominations for Director, Mrs. Lowry moved that the Secretary be directed to cast a unanimous ballot for Mr. Carl Gerber as Director. This was seconded and unanimously approved.

President Livingston next introduced the speaker of the evening, Dr. H. C. Yoder, of the Carnegie Institution of Washington, who gave an excellent talk on mica, illustrated by slides and plastic models of atomic structure.

Visitors and friends were introduced and made welcome.

The meeting adjourned at 9:40 p.m.

Paul J. Rees
Secretary-Treasurer

Mid-West

Akron Mineral Society

In November our Society elected new officers who took office on January 1, 1954. President, M. F. Fraleigh; Vice-President, Frank E. Mabry; Secretary, Mrs. M. F. Fraleigh; Treasurer, James Munro; Publicity Secretary, H. C. Treese.

Our January meeting was held at the residence of Dr. and Mrs. Paul Acquarone, who are members of long standing and highly esteemed by everyone.

Plans were considered for 1954 activities. The February meeting will be held at the residence of our vice president, Mr. Mabry, February 20, 7:30 P. M. There will be slide pictures shown of many different kinds of rock and mineral specimens. There will be descrip-

tive explanations as the slides are shown. Then, as usual, there will be a number of "bragging pieces" on display. This will be followed by light refreshments and a session of good fellowship together.

Our new president, Mr. Fraleigh, left on January 24 by air, on a trip that will take him to Mexico City, Mexico; Guatemala City, Central America and to Bogota, Columbia, South America. He expects to take a few side trips in the search of gems, crystals and minerals that so delight the heart of a rockhound. One of the points of interest he expects to visit is Lake Guatavita, in the Andes Mountains, in and around which are supposed to be artifacts of the Pre-Inca or Chibcha Indians.

About March 20, our Mineral Society will meet at Mr. Fraleigh's home and we are all looking forward to that meeting with anticipation as he will be showing slide pictures of the wonderful places he visited and telling of the many interesting incidents.

Our Society is planning to have the Fourth Annual Rock and Gem Exhibit the latter part of April, at the Akron Museum of Natural History. The entire display space of the museum will be filled with the choicest specimens selected from the private collections of our members. Our 1953 exhibit was viewed by well over 10,000 people with much favorable comment. We shall endeavor to make the 1954 exhibit even better.

Our Society is also planning to have a nice display at the 1954 Midwest Convention in Milwaukee.

H. C. Treese, Pub. Sec.
1895 Manchester Rd.,
Akron 14, Ohio

Chicago Rocks and Minerals Society

The Chicago Rocks and Minerals Society celebrated its 8th birthday on February 13th, with cake and coffee, preceded by a showing of a color film on the life and arts of the Indians of the American Southwest. Silversmithing, basket and blanket weaving and pottery making as done by the original Americans, with primitive and ingenious tools, was shown step by step.

The kind donor of this interesting film was the Sante Fe Railroad.

Chicago Rocks and Minerals Society
3618 N. Page Ave.
Chicago 43, Ill.

Indiana Geology and Gem Society

At the January meeting of the Indiana Geology and Gem Society, of Indianapolis, the following officers for the coming year were elected: President, Francis M. Hueber; Vice President, Lester R. Sparks; Secretary, Miss Florence Geisler; Corresponding sec'y., Mrs. Fred S. Smith; Treasurer, Fred S. Smith.

Host for the evening was Mr. Sparks, who also gave the program, showing beautiful color slides on minerals.

A week later Mr. Sparks entertained at his home 30 members of the Hoosier Handicrafters, an organization which is affiliated with the local YWCA, giving them a talk on "The Art of the Lapidary", and demonstrating the use of his lapidary equipment.

Elsa H. Smith, Sec'y.
(Mrs. Fred S. Smith)
6840 Dover Rd.
Indianapolis 20, Indiana

Rochester Earth Science Society

The Rochester Earth Science Society at its January meeting heard a talk on *Radio Active Dating* by Dr. Marvin M. D. Williams, a club member who is a physicist. Members had been invited to bring specimens that they wished to have tested for radio activity. Dr. Williams had brought a geiger counter with which to do this.

On Feb. 5 Mr. Donald Cowles, soil scientist of the U. S. Soil Conservation Service, gave an illustrated talk on "Geology and Soil Development in Southeastern Minnesota".

Mrs. Dana Rogers
Corresponding Secretary
820 10½ St. S. W.
Rochester, Minnesota

South

Fort Worth Mineral Club

The following officers were elected at the regular meeting of the Fort Worth Mineral Club, Feb. 5th, 1954.

President, Mr. Lowell Kendrick; 1st Vice Pres., Mr. Robert Harris; 2nd Vice Pres., Miss Millicent Rentro; Secretary, Mrs. J. L. Sanderson; Treasurer, Mr. John Orr; Executive Board Members, Miss Dorothy Caraway, Mr. C. A. Rigney.

The Forth Worth Mineral Club meets the first Friday of each month. We do not have a permanent meeting place yet.

At the recent Mid-South Gem, Crystal and Mineral Show held at Hot Springs, Ark., Miss Millicent Renfro was appointed Queen of the show and was awarded a 14-point rough diamond, mined at Murfreesboro, Ark., and set in a block of the rock in which it occurred.

Austin Gem and Mineral Society

On December 10, 1953, the Austin Gem and Mineral Society held a Christmas Party and rock exchange. The following officers were installed for the new year: President, Mr. Joe Mikolaj; Vice-President, Mrs. Louis Spears; Secretary, Mrs. R. E. Hughes; Treasurer, Mrs. H. L. Arno. Approximately one hundred members and guests attended, including Santa Claus.

E. A. King
2712 East 22nd St.
Austin, Texas

MID-SOUTH GEM, CRYSTAL, AND MINERAL SHOW
(January 23 and 24, 1954)

This show sponsored by the Arkansas Gem, Mineral, and Geology Society and with the Arkansas Mineralogical Society acting as host was held in the Phillips Willow Room at Hot Springs, Arkansas, under the leadership of J. Elmo Jehlen, President; H. O. Kirkland, Vice-President; Mrs. J. A. Talbot, Secretary-Treasurer; George F. Croad, Show Chairman; Richard Buhlis, Show Manager. The combined membership of the two clubs worked on this project for six months and the result was a fine show and rockhound meeting that will long live in the memory of everyone who attended it.

The enormous success of this undertaking is a monument to the unselfish and untiring work of one man Dick (Rattlesnake) Buhlis, who took the lead in organizing it and making it operate so smoothly. We who saw one of the best small mineral shows ever assembled, and we take off our hats to one of the finest rockhounds that it has ever been our pleasure to know.

The Arkansas Gem Club decided to hold this show to bring the rockhounds of the Mid-South together and to provide them with the opportunity to have a regional meeting of their own. It was also our hope that other clubs in this area might respond to the formation of a Southern Federation if that seemed feasible.

That this show fulfilled a long felt need in the South is evidenced by the fact that 18 dealers had booths there, and 5 commercial exhibits, 18 private exhibits and 4 club exhibits were displayed in the Willow Room. Approximately 900 rockhounds and other interested persons attended this affair and numerous requests were made to hold this show annually at Hot Springs.

Even though the weather turned bad and traveling was difficult, rockhounds from Arkansas and our neighboring states came and had a wonderful time. We wish to especiallly thank the commercial dealers and the Texas Clubs for the way in which they responded to and supported our show. It is evident that Hot Springs is a natural place to hold a mineral show as it has plenty of facilities to take care of overnight guests and it is in the center of one of the most interesting geological and mineralogical areas in the country with such places to visit as the hot springs, Magnet Cove, the quartz mines, and the diamond mines.

The booths and exhibits were set up on Friday, January 22nd, and the show was opened to the public at 10:00 A.M. Saturady, January 23rd. All visiting rockhounds and dealers were registered and given badges to enable them to freely come and go during the show.

Dick Buhlis had things moving constantly during the two days of this affair. At 1:00 P.M. on Saturday, the mayor of Hot Springs, welcomed our visitors and Norman Williams the State Geologist, Cy King the president of the Hot Springs bathhouse association, Howard Miller owner of the Arkansas Crater of Diamonds, and Kenneth Fry of the Texas Clubs gave short talks.

At 2:00 P.M. the three judges, Norman Williams, Margaret Schoonover, and Dr. Robert Shaver, judged the various exhibits and at 9:00 P.M. prizes and awards were made to the winning exhibits and their owners. The show closed each night at 10:00 P.M. but the rockhounds stayed to all hours of the evening talking about the fine show that they were seeing.

Our visitors had been promised field trips and they went to the diamond mine, the quartz mines and to Magnet Cove where many minerals were collected.

Sunday was also a busy day with an auction sale of minerals being held in the afternoon and the awarding of the door prizes and the grand prize of the show in the evening. The highlight of this affair was the selection of Millicent Renfro of Fort Worth, Texas and Kenneth Fry of Houston, Texas to be queen and king of the show.

We of the Arkansas Gem, Mineral and Geology Society can say after the show that all of our visiting rockhound friends had a wonderful time and everyone left Hot Springs with many new friendships made and with real regret that this affair had to come to an end on Sunday night.

George F. Croad,
4605 I Street,
Little Rock, Ark.

Rocky Mountains

Rawlins Rockhounds

The Rawlins Rockhounds held their annual meeting on the evening of January 12, and elected the following officers: Mr. Chris Larsen, President; Mr. Ralph E. Platt, Vice-President; Mrs. T. M. Wood, Rec. Sec'y.-Treas.; Mrs. George O Fellows, Corr Sec'y.; Mr. R. I. Martin, Director at Large; Mr. Edward Cross, Custodian.

Bids have been placed for both the Rocky Mountain Federation of Mineral and Gem Societies and the Wyoming State Mineral and Gem Society to hold their annual meetings, shows and conventions in Rawlins, Wyoming, in 1955. Efforts are being made to hold both meets at the same time.

We are very proud of our Mineral Club, since we have been organized for less than a year, and finished 1953 with a membership of 104 members. We had five field trips last year; one in August in which members from Rawlins, Cheyenne, Casper and Laramie clubs participated. On that field trip there were fifty-two members from the various clubs present, and we

went to a number of good collecting areas. We hope to do as well this year.

Mrs. Geo. O. Fellows
Corr. Sec'y.
612-13th
Rawlins. Wyo.

West

Mineralogical Society of Southern California, Inc.

At the December meeting of the Mineralogical Society of Southern California, Mr. H. Stanton Hill gave a talk on the Silver Mining Problems of the Comstock Lode". These included lack of transportation until a railroad was built; lack of water and lumber which had to be brought over a mountain range; lack of know-how connected wieh the milling of silver and also the big problem of deciding who owned the apex of each vein, (if, indeed, it was more than a single one)—all of which led to a great deal of litigation.

Finally, there were many difficulties in the mining, as the ore was not constant, going from barren to bonanza and back again. Also, hot water was encountered in depth. Of the 103 companies which mined, 102 collected assessments from their stockholders, and only 6 ever paid any dividends, though 400 million dollars in silver was taken out.

Mrs. Milton A. Wise
Chairman, Publicity Committee
1162 Woodbury Road
Pasadena 6, Calif.

Marcus Whitman Gem and Mineral Society

At the Jan. meeting Mr. Lee Robinson gave an interesting talk on Indian Artifacts and showed many trays of arrow heads he and his wife found along the Colombia River from the mouth of the Snake River to The Dalles Oregon. Among these items were many of the famous Columbia River Bird Points of Carnelian, chalcedony, agate, basanite, jasper and petrified wood much of it being high grade gem material. He showed a most unusual and rare clay bowl that was found on an island a few miles above McNary Dam now covered by many feet of water. So far as it is known this is the only one ever found in the North West.

On instruction of our Mineral Society I am mailing you a copy of our Year Book. We will be glad to exchange one of our year books with any other club mentioned in R & M. Contact the undersigned.

G. W. Weber
1320 Portland Ave.
Walla Walla, Wash.

The Puget Sound Gem & Mineral Club

As Publicity chairman of the Puget Sound Gem and Mineral Club, I wish to call your attention to a recent action of our club which I think worthy of a small notice in your excellent magazine.

We have filed four minerals claims on the top of Red Top Mountain near Liberty, Washington, to preserve this well known area for our great rockhound fraternity. Our club, having heard that outside interests were thinking of acquiring this area with the view of making a charge to hunt for it, decided to put a stop to the idea at once. Therefore, we are now proud to be able to offer free digging and hunting on our claims to all rockhounds all over the United States. We hope to have a cairn placed in a strategic spot on each claim, where visitors may register and tell us how many hours they spent in happy hunting.

Red Top is one of the best known productive areas and there has been some very good blue and lavendar agate brought out—also lots of crystals and geodes.

Frances L. Thompson
13251 Ambaum Blvd.
Seattle 66, Wash.

Sacramento Mineral Society

Officers for the 1954 term were elected at the January meeting of the Sacramento Mineral Society, held at the Turn Verein Hall, 3349 Jay Street in Sacramento.

Dermond D'Arcy was chosen president to succeed George Winslow. Other officers are Martin Colony, vice president; Ernest Pook, Financial Secretary; Mrs. Martin Colony, Corresponding Secretary, Luther Ford, Treasurer and Mrs. Lillian Coleman, Federation Director.

Hal Altman,
Publicity Chairman
2401 W. Streee
Sacramento, Calif.

The Los Angeles Lapidary Society

At the February meeting Georgia White took The Los Angeles Lapidary Society on a tour covering river trips on the Colorado, the calm smooth waters and high canyon walls of Glen Canyon, a trip on the San Juan River covering spectacular spots, and into the mighty Grand Canyon. Her talk was illustrated by 3-D color slides.

Plans are under way for the annual Gem Show to be held May 1 and May 2 at the Van Ness Playground, 5720 Second Street, Los Angeles, California.

Nell Stein
Corresponding Secretary
6110 Rimpau Blvd.
Los Angeles 43, Calif.

The Humboldt Gem and Mineral Society Holds Meeting

About 65 persons attended a recent meeting of the Humboldt Gem and Mineral Society. During the business hour, Mr. Hutchinson reported on the last meeting of the Tri-County Gem and Mineral Committee. This inter-county committee is made up of representatives from the Gem and Mineral Society of Brookings, Curry County, Oregon, Del Norte County Rock Hounds and The Humboldt County Gem and Mineral Society of California. This group has been formed for the purpose of holding gem and mineral shows in each county sometime during the year, in which the three counties will participate. Mr. Hutchinson stated that rules and regulations for governing the activities of these shows have been formulated. The Gem and Mineral Show in Brookings, Oregon, will be held during the Azalia Festival in that city. Dates of the shows to be held in Del Norte and Humboldt Counties will be decided later.

Suggestions that The Humboldt County Gem and Mineral Society should be incorporated aroused considerable interest and discussion. A committee was appointed to work on the problem.

The following officers elected for the coming year: President, Mrs. Amelia Alward. Secretary and Treasurer, Mr. Reg Petty. Historian, Lois Pederson.

A potluck supper and social hour followed the business session.

L. B. Black
Publicity Committee Chairman
2751 Pleasant Ave.
Eureka, Calif.

GEOLOGY OF BRADFORD CO., PENN.

(*Continued from Page* 146)

Fairchild, H. L., *The Susquehanna River in New York and Evolution of Western New York Drainage,* N. Y. State Mus. Bull. No. 256, 1925.

Lohman, S. W., *Ground Water in North-Central Pennsylvania,* Pennsylvania Geological Survey, Bull. W-6, Harrisburg, 1939.

Myers, Richmond E.. *The Long Crooked River,* chap. 2, Christopher, Boston, 1949.

Peltier, Jouis C.,*Pleistocene Terraces of the Susquehanna River in Pennsylvania,* Pennsylvania Geological Survey, Bull. G-23, Harrisburg, 1949.

Willard, Bradford, *The Devonian in Pennsylvania,* Pennsylvania Geological Survey, Bull. G-19, Harrisburg, 1939.

THE AMATEUR LAPIDARY

(*Continued from Page* 168)

piece of agate to such an extent that it permits an unparalleled examination of the interior. You might not like the odor but since only a little quantity applied with the fingertip is used, it shouldn't be too objectionable. Use enough in the selected spot to give a glassy layer and you will be startled by the sudden and complete "opening up" of the interior.

PEGMATITE MINERALS OF THE UNITED STATES

(*Continued from Page* 151)

demand because of their special alloying properties, if they were only present in economical concentrations. Thus most of the columbite and tantalite used comes from outside of the United States, principally from Brazil. The most noted locality for many of these minerals was the rare earth pegmatite at Barringer Hill, Llano county, Texas. Most of these columbium, tantalum, and titanium minerals are rather rare and do not occur in economical concentrations. Some microlite has been mined from the Brown Derby mine near Ohio City, Colorado, and some euxenite and samarskite have been saved at the mica and feldspar mines in the Spruce Pine district of North Carolina for their rare element content but there has been no specific mining at these localities for these minerals.

(To be continued)

Rocky Mountain Convention

The Eleventh Annual Convention of the Rocky Mountain Federation of Mineral Societies will be held in Salt Lake City, Utah, June 11, 12, 13, 1954 at the Salt Lake County Fair Grounds, 5177 South State Street on U. S. Highways 50, 89, 91.

June 9, 10 will be reserved for placing displays and June 14 for their removal.

Arrangements for Dealer space W. T. Rogers, 1230 Parkway Ave. Salt Lake City, 5.

Arrangements for Dealer space — W. T. D. Bennion, 1403 Emerson Ave., Salt Lake City, 5.

Host — Mineralogical Society of Utah.

Golden W. Robbins, President, 715 Boston Building, Salt Lake City, 10.

Stewart Romney, Secretary, 409 University Street, Salt Lake City, 2.